

American Gas *Association* MONTHLY

Gas Supplies U. S. Fuel Needs

Today's Ranges Excel in Test

Research Aids to Utilization

Appliance Servicing Trends

Convention To Stress Defense

September



1940

VOLUME XXII NUMBER 8



Gas Industry Day

AT THE NEW YORK WORLD'S FAIR

is Friday, October 11

Here is real news for delegates who attend the Association's convention in Atlantic City, October 7-10. The convention ends Thursday afternoon the 10th. Early the following afternoon—Friday, the 11th—the gas industry's big party starts going places and doing things at the 1940 New York World's Fair.

First you will receive a free ticket of admission by courtesy of the Metropolitan New York Companies. Then you will be given a key to the Fair's "Golden Key Contest" which may win you an automobile, we hope, we hope.

Once inside the Fair gates the first stop is our industry's own Gas Wonderland—flagstones that talk—Tiny Town with houses that open up and talk—the kaleidoscopic fountain—a show totally different from last year—a show that is drawing 22% of the entire gate!

- 2 to 6 P.M. **OPEN HOUSE** in the private lounge of Consolidated Edison's spectacular "City of Light" exhibit, with the company as your host. You will witness a magnificent spectacle—gargantuan New York, from Coney Island to far away Westchester County. This greatest of dioramas on a circular stage more than a city block long makes New York come alive before your eyes.
- 5 to 7 P.M. **COCKTAIL PARTY** for Association officers and convention delegates by Association of Gas Appliance & Equipment Manufacturers, Court of Flame Club, Gas Wonderland. Good fellowship and a lot of fun.
- 6 to 6:30 P.M. **SPECIAL BROADCAST** program by Station WINS and three-minute talk by President Beckjord in Gas Wonderland Auditorium.
- 8 P.M. **DINNER** in a famous pavilion overlooking spectacular Lagoon of Nations fountain display. Special music during dinner. Ticket arrangements to be announced later.
- 9:15 to 9:30 **VIEW OF LAGOON** of Nations display from pavilion. You who saw this vast, colorful fire-water-fireworks extravaganza last year were thrilled. It is even better this year.
- 9:45 P.M. **FIREWORKS** display in Fountain Lake, Amusement Area, and tour of attractions.

Any member of the gas industry is welcome to attend the dinner and join the gang in the Amusement Area and Gas Wonderland but admission to Consolidated Edison's open house, The A.G.A.E.M. cocktail party and the WINS broadcast is restricted to Atlantic City convention delegates who wear the official convention badge.

Don't miss this World's Fair party. Plan now to make it a fitting climax to your convention trip by returning from Atlantic City by way of New York.

Remember the Dates:

ATLANTIC CITY CONVENTION—October 7-8-9-10

GAS INDUSTRY DAY, WORLD'S FAIR—October 11

Subsequent mailings to members will give full details not available at this time.

AMERICAN GAS ASSOCIATION



CONTENTS FOR SEPTEMBER 1940



Seldom, if ever, has the annual convention been held at a more critical time in our national history. No one knows what may happen in the intervening twelve months before the next convention is held. It, therefore, behooves all alert gas men to make the most of this opportunity to meet their fellow workers, and to hear the leading authorities on vital topics of the day. A glance at the program will suffice to prove its timeliness and significance. . . . It's our rare privilege to present the findings of a five-year study of gas range performance by the Ladies' Home Journal Workshop which show conclusively the great strides made by gas cookery in that period. Coming from an unbiased source, Miss Pennock's article provides new ammunition for the gas range salesman. . . . Giving point to the Workshop's study, A. G. A. statistician, Ed. Martin turns a critical eye on the claims of the "Kook with Kilowatt" contingent which would have us believe that this is an electric age. His analysis is startling. . . . Among the gas industry's biggest customers, the U. S. Government is tops according to the current series of articles by Mr. Beau. This issue covers the War and Navy Departments.

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Prospect Street Plant of the Citizens Gas and Coke Utility, Indianapolis. This photograph by H. H. Crook is another prize-winner in the contest for MONTHLY frontispiece illustrations.

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JAMES M. BEALL, *Editor*

CONVENTION BOUND

... Strong Program Reflects World Events

WHILE the world waits anxiously for a decision in the tremendous European struggle now waging, the gas industry is marshalling its resources for a national convention that will prove beyond doubt, its great and essential service to the American way of life. National defense and the contributions of the industry to better living will be the dominant themes in a closely knit program featuring scores of national authorities on a wide range of subjects.

The twenty-second annual meeting of the Association will be held at the Playground of the World—Atlantic City—starting the week of October 7. Let no one mistake, however, the seriousness of the convention, nor the important problems which will be presented there. It will be, by all odds, the most significant meeting in many years. The Program Committee, headed by George S. Hawley of Bridgeport, Conn., has taken into account the pressing national events which are shaping the future.

A very important feature of the general sessions is the annual election of officers. Following this and the report of the treasurer, the convention will get down to current problems with an address by Dr. Harold G. Moulton, president of The Brookings Institute, Washington, D. C. Under the timely title "Industry in a Changing World," Dr. Moulton will drive home the pertinent lessons to be learned from today's events in the industrial world. As the head of an institution devoted to public service through research and advanced training in economics and public administration, Dr. Moulton is well qualified to shed new light on the gas industry's problems.

Walter C. Beckjord, president of the American Gas Association, and vice-president and general manager of Columbia Gas & Electric Corp., will appear early on the program with a keynote address on "The Gas Business in the Modern World." In his usual forthright manner President

Beckjord will analyze the gas industry's position in the light of experience gained this year as leader of the Association's cooperative undertakings. He will also preside throughout the general sessions of the convention.

Special attention will be devoted to national defense and the gas industry's opportunities in the rearmament program in an address by Franklin T. Rainey, of Columbus, Ohio, chairman of the Association's Industrial Gas Section. This subject will be dealt with further in a symposium of industrial gas sales managers at the Wednesday Industrial Gas meeting, under the leadership of Henry Obermeyer, assistant vice-president, Consolidated Edison Co. of New York, Inc. Technical phases of the national defense program will be probed at the Technical Section meetings during the convention.

The consumer movement has been receiving much attention, even in these war-conscious days, and is labelled the most significant movement of the day. In recognition of this trend, John Benson, president of the American Association of Advertising Agencies, New York, has a prominent place on the program. In an address entitled "The Consumer Movement Is with Us—What About It?" he will attempt to evaluate its significance and point out the possibilities of consumer education in regard to advertising and advertised products, with particular attention to the gas industry and its national advertising program.

The parade of talent from outside the gas industry will continue on the general sessions' program with an address entitled "As Others See Us" by Elmo Roper of *Fortune* magazine. A noted market analyst, who has done considerable work in the public utility and manufacturing field, Mr. Roper is probably best known publicly as the man who conducts the research work for the *Fortune* Magazine Public Opinion Surveys. He has done a great deal of research for such organizations as the New York Stock Exchange,

The American Bankers' Association, National Association of Manufacturers, etc.

Frank H. Adams, president of the Association of Gas Appliance and Equipment Manufacturers, in an address entitled "A United Front" will further emphasize the Siamese-twin relationship of the appliance manufacturers and the gas distributing companies. Their problems are inseparable and Mr. Adams will point out how, through mutual cooperation, they may be solved even more efficiently than in the past.



Walter C. Beckjord,
President, American
Gas Association



Dr. Harold G. Montlton,
President, The
Brookings Institute



Elmo Roper, Re-
search Director,
Fortune Magazine



John Benson, Presi-
dent, Amer. Assn. of
Advertising Agencies

Air Conditioning Topic

One of the recognized fathers of air conditioning, Dr. Willis H. Carrier, chairman of the board of Carrier Corporation, Syracuse, will address the convention on this most important topic. A noted scientist, Dr. Carrier has many patents and other contributions to his credit and is especially known for his pioneer work in the development of the science of air conditioning. He is credited with research which led, in 1903, to develop-

ment and installation in a Brooklyn lithographing plant, of the first air conditioning system, a system which allowed the lithographer to control production in the summer. His remarks are certain to be of interest to an industry at present intensely preoccupied with this subject.

Reverting to more prosaic problems, the gas industry will receive valuable advice and information on financial subjects from Allan M. Pope, president, The First Boston Corporation,

and one of the foremost investment bankers in the United States. Under the title, "Financing Today and Tomorrow," Mr. Pope will review the methods of finance in the light of the present chaotic world conditions. As a past president of the Investment Bankers' Association, director of a London corporation and many other institutions, as well as being prominently identified with New York University, Mr. Pope's views wield unquestionable authority in this field.

Medal Awards

An always-welcome feature of the convention, the award of honors for outstanding achievement, will again be a part of the general sessions' program. These include: McCarter Medals for outstanding acts of life saving; the Charles A. Munroe Award for the greatest individual contribution to the general advancement of the gas industry; the Beal Medal for the best technical contribution to Association meetings throughout the year, and the A. G. A. Meritorious Service Medal for the individual who is judged to have performed the most meritorious act during the year.

The second annual award of the Gild of Ancient Suppliers will also be made at one of the general sessions. This organization is limited to men of at least ten years' service to the gas industry and all Suppliers are executives and representatives of concerns who make or distribute appliances, equipment, supplies or services to gas companies. The first award, last year, went to R. M. Conner, director of the A. G. A. Testing Laboratories.

Reports of the Resolutions and the

Sparkling Convention Entertainment Promised by Committee

The Entertainment Committee, of which John St. John of Madison, Wisconsin, is chairman, is completing arrangements for an unusual program at this year's convention for the entertainment of delegates and their guests.

Several surprises are in store for those who go to Atlantic City for the week of October 7. Present plans include a surprise party at the Traymore Hotel on Tuesday evening, October 8, at which a large assortment of valuable and useful prizes will be distributed. There will be plenty of fun for everyone who attends this party, the committee promises.

A dance in the ballroom of the Atlantic City Auditorium will be the headline attraction on Wednesday evening, October 9. A well-known orchestra has been engaged for this event and good music is assured. Between dances, there will be several features which in themselves will afford a pleasant evening.

And, oh yes, for the ladies—there will be a card party and tea in a beautiful setting at the Ambassador Hotel on Wednesday, October 9.

Earl W. Roberts, of Cleveland, heads the committee in charge of the ladies' card party and tea; W. S. Guitteau, of New York, is directing arrangements for the surprise party, and W. G. Murfit, of Philadelphia, is supervising the conduct of the dance. These men will be on deck at Atlantic City to see that everyone has a good time in between business sessions.

As a postscript, may we remind you of Gas Industry Day at the New York World's Fair on October 11. For the program, please turn to the inside front cover of this issue.



Frank H. Adams,
Pres., Assoc. of Gas
Appl. & Equip. Mfrs.



Dr. Willis H. Carrier,
Chairman of
Board, Carrier Corp.



Allan M. Pope, Pres-
ident, The First
Boston Corporation



Ed. C. Connor, Con-
sulting Engineer,
Dallas, Texas



Edgar G. Hill, Vice-
President, Ford,
Bacon & Davis



P. McDonald Bid-
dison, Consulting
Engineer, Dallas

Time and Place Committees will round out the general sessions' program.

The sectional meetings, which will be held throughout convention week, will specialize on various phases of the industry's operations and dissect the most pressing problems facing these branches of the gas business. These meetings, which are usually considered the most fruitful of the convention, will provide something for every man, no matter what his job in the industry. While it is possible to discuss only a few features of the detailed programs in this issue, complete tentative programs will soon be mailed to all members of the Association.

Natural Gas Day Opens Convention

In accordance with previous custom, Monday, October 7, will be Natural



Elmer F. Schmidt,
Chairman, Natural
Gas Section

Gas Day at the convention. The morning will be devoted to important natural gas technical and research committee meetings, while the formal program will be held in the afternoon.

Among the important papers to be presented on the Natural Gas Section program will be that on "Liquefaction, Storage and Regasification of Natural Gas for Peak Loads." Covering one of the most far-reaching developments of the year, this paper will present for the first time the engineering theory, construction methods and practical application of the plant now being built by The

Gas Machinery Company for The East Ohio Gas Company in Cleveland. It will be presented jointly by Dr. R. W. Miller, research director, The Peoples Natural Gas Company and Hope Natural Gas Company of Pittsburgh, and J. A. Clark, chief engineer, Hope Natural Gas Company, Clarksburg, W. Va. An invitation for interested gas men to visit this new plant in Cleveland on their return trip from the convention has been extended by W. E. Steinwedell, president of The Gas Machinery Company.

Another featured presentation on the natural gas program will be that by E. C. Connor, consulting engineer of Dallas, Texas, on "Methods of Valuation—Production System Property—for Rate-Making Purposes." This will be followed by a discussion led by Ralph E. Davis, consulting gas engineer, of Pittsburgh, and Edgar G. Hill, vice-president, Ford, Bacon & Davis, Inc., New York. Panel discussion from the floor will be conducted by P. McDonald Biddison, consulting engineer of Dallas.

Accountants Plan Lively Meetings

A program designed to enhance the accountants' reputation for lively and constructive meetings will be presented by the Accounting Section. Speakers from within and without the gas industry will discuss such subjects as "Wages and Hours"; "Insurance Coverage"; "The National Debt and Defense Cost in Relation to Taxes"; and "Original Costs on Property, Plant and Equipment."

The increasingly important topic of "Depreciation" will be fully discussed by a speaker well qualified to deal au-

thoritatively with this subject. Another topic vital to accountants, the experiences of the gas industry under the new Uniform Classification, will be given by an outstanding utility expert.

The Accounting Luncheon Conferences, which have been such a conspicuous success for a number of years, will be continued and separate conferences have been planned on Tax Accounting, Insurance and Depreciation, Property Records Accounting, Customer Accounting, Customer Relations, General Accounting, and Credit and Collections. The increase in the number of luncheon conferences over previous years is expected to keep each group within a reasonable size, thus affording each member present an opportunity to express his views or make such inquiries as he desires.



F. B. Flabive, Chair-
man Accounting
Section

Sales Headliners To Hold Spotlight

With sales as the dominant theme, the meetings of the Commercial Section will be short and to the point. Two afternoon sessions have been arranged for Tuesday and Thursday at the Hotel Traymore, beginning at 2:30 P.M. and closing at 4:45 P.M. each day.

The spotlight of attention will be focussed on the symposium at the first session in which all of the incoming chairmen of the section will participate. At this symposium each chairman will outline the plans of his committee for the coming year, thus giving the convention a preview of the section's activities for 1941.



*Davis M. DeBard,
Chairman, Commercial Section*

Franck, of Milwaukee, chairman of the A. G. A. Refrigeration Committee, on Refrigeration.

Other speakers include George F. B. Owens, assistant vice-president, The Brooklyn Union Gas Co., on "What Is Happening to the Domestic Load and What Are We Doing About It?"; B. H. Wittman, The Peoples Gas Light & Coke Co., Chicago, on "The Certified Quality Program"; and W. J. Schmidt, Long Island Lighting Co., on "Water Heating Promotion." Speakers of similar caliber will talk on house heating and other activities of national interest.

An interesting feature of the program will be the presentation of awards in recognition of outstanding sales achievements during the current year. At the Tuesday session, B. T. Franck, chairman of the Refrigeration

Committee, will present prizes to the winners of the nation-wide refrigerator contest. The winners of this contest in the various divisions will receive trips to Bermuda with all expenses paid. This honor flight will take off from Atlantic City at noon on the closing day of the convention—allowing two days in Bermuda and return.

High-scoring salesmen in the national Certified Performance gas range sales drive will be honored at the Wednesday session when George H. Stone, chairman of the Domestic Range Committee, will present prizes to regional winners. Cash prizes and all-expense trips as well as recognition in the CP Range Club will be awarded to the top-ranking gas range salesmen.

Davis M. DeBard, vice-president, Stone & Webster Service Corp. and chairman of the Commercial Section, will preside at the Tuesday session and R. J. Rutherford, vice-president, Worcester Gas Light Co., incoming chairman of the section, will conduct the final session.

Marketing Experts To Speak

Headliners in the art of sales and sales technique, including many top-flight sales executives, will participate in the balance of the Commercial Section program. Among those who will address the meetings are: T. V. Houser, vice-president, Sears-Roebuck, Chicago, on the subject of "Retail Merchandising"; B. L. Johnson, editor, American Builder and Building Age, on "What the American Public Wants in New Homes"; C. C. Young, Gas Service Co., Kansas City, on the Certified Performance Range Program; and B. T.



T. V. Houser, Vice-President, Sears, Roebuck & Co.



Bernard L. Johnson, Editor, American Builder and Building Age

As timely as the hour, the program of the Industrial Gas Section, which will be held Wednesday and Thursday afternoons at the Hotel Traymore, includes several innovations. With Franklin T. Rainey, chairman of the section, presiding, the Wednesday meeting will concentrate on the use of gas in national defense. The feature of this session is the symposium of industrial gas sales managers on the subject "Further Aspects of Gas in National Defense." Under the leadership of Henry Obermeyer, of New York, the symposium will cover (1) Sales Opportunities, Policies and Financing; (2) Cooperating with Plant Production Men; (3) What of Equip-



*Franklin T. Rainey,
Chairman, Industrial Gas Section*

ment and Controls?; and (4) The User's Viewpoint.

The Wednesday session will include an address on "Industrial Technicians, Today and Tomorrow" by a nationally known industrial leader and moulder of industrial and business opinion. It is also planned to present a paper describing "New Horizons on Commercial Cooking and Baking." Election of officers will be held at this session.

Following the industrial gas sales luncheon on Thursday, interest at the afternoon session will center on an "Executive Round Table on Industrial Gas" led by H. Carl Wolf, president of the Atlanta Gas Light Co., Atlanta, Georgia, and incoming chairman of the section. Occupying the greater part of the afternoon, this feature will cover a variety of topics. An interesting exhibit of Industrial and Commercial Gas Advertising and Publicity will be held in connection with the section's meetings.

Timely Topics of Industrial Gas

Technical Program Stresses Defense

Tying up with the national defense theme, the Technical Section will have many papers to offer the visiting engineers and chemists during full afternoon meetings on Tuesday and Wednesday. With F. M. Goodwin, of Boston, chairman of the section, presiding, the program will go directly to the heart of many production and operating problems.

First approach to the new situation will be made by P. T. Dashiell, of The Philadelphia Gas Works Co., in a paper on "Technical Problems of the Gas Industry in Connection with National Defense." This subject is expected to arouse considerable discussion and to be touched in succeeding reports.

Gas Production To Be Studied

The first session will also include a paper on "Residuum Petroleum Oils in the Manufacture of Coke Oven Gas" by C. J. Ramsburg and G. V. McGurl of the Koppers Company, Pittsburgh, and one on "Elimination of Noise in Atmospheric Gas Burner Application" by R. M. Conner, director of the A. G. A. Testing Laboratories. Valuable reports of the Distribution and Gas Production Committees will be made at this session by the respective chairmen, C. H. Waring and W. K. Beard.

A new subject on the section's program and one expected to attract widespread attention is that on "Plastics and the Gas Industry" which will be presented on Wednesday by Reginald L. Wakeman, of Mellon Institute of Industrial Research, Pittsburgh. Other papers to be presented at this session include: "Determination of Combustion Characteristics of Fuel Gases" by Louis Shnidman, Rochester Gas & Electric Corp., Rochester, N. Y., and "Studies in Microbiological Anaerobic

Corrosion" by Raymond T. Hadley, Susquehanna Pipe Line Co., Philadelphia. S. J. Modzikowski, chairman of the Chemical Committee, will present his committee's report and the report of the Gas Conditioning Committee will be made by its chairman, L. J. Willien.



P. T. Dashiell to speak on National Defense



L. J. Willien will present Gas Conditioning Report

Home Service at the Breakfast Table

"Home Service in the American Way of Living" will be the theme of the program at the Home Service Breakfast to be held Wednesday morning at the Hotel Traymore. This theme was selected to emphasize the influence which can be exerted by home service workers in their daily contacts with women

customers. Mrs. Eliza M. Stephenson, of the Jersey Central Power and Light Co., Asbury Park, N. J., will preside as chairman of the Home Service Committee.

The home service program is composed of a group of short talks by home service directors and will deal with the subjects of sales floor activities, maids' classes, school contacts, radio and advertising. Greetings from Association executives will be followed by a Cook Book Review during which authors of well-known cook books will be introduced.

Personnel Practices Luncheon Meeting



Louis Ruthenburg

H. L. Donaldson of Pittsburgh, chairman of the committee. Feature of the meeting will be an address by Louis Ruthenburg, president of Servel Inc., on "Building Employee Understanding of Business Management."

Mr. Ruthenburg is a recognized authority on industrial relations and has devoted

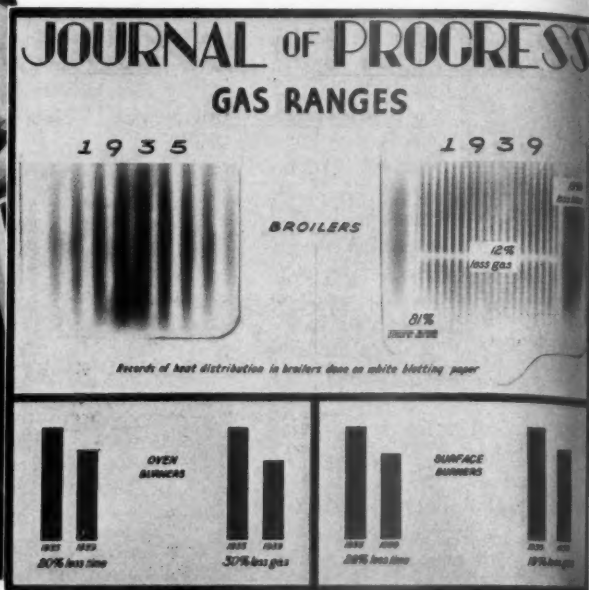
considerable effort to develop employee appreciation and understanding of management's problems. The results he has achieved in this field have attracted national attention and study. He is a director of the American Gas Association and the Association of Gas Appliance and Equipment Manufacturers and has been actively identified with the gas industry since his appointment as president of Servel Inc., in 1934.

Mr. Donaldson, who is director of personnel of the Philadelphia Company and its subsidiaries, will preside at the luncheon conference. Charles S. Simpson, manager, personnel department, The Philadelphia Gas Works Company, is in charge of arrangements.

Tickets for the luncheon conference are \$1.50 and should be obtained in advance from the American Gas Association, 420 Lexington Avenue, New York, N. Y.



Below is a graphic presentation of the gains made during the five-year record of gas range performance at the Ladies' Home Journal Workshop. At left, Wilbert P. Frantz, staff engineer, makes a check of preheating time and gas consumption



Today's Gas Ranges . . . Hold Front Rank in User-Performance Test

WE thought gas ranges were good five years ago but studies at the Ladies' Home Journal Workshop show that they are far better now. The increase in convenience and in pleasure of working with these new ranges is something not easily measured. Progress in speed and efficiency can be given in figures.

Gas bills with a 1940 range can easily average a fifth less than with a range of five years ago. Time for reaching cooking temperature has been cut as much as a half in some instances, and lesser cuts have been made all along the line. Total baking times have been reduced and the very low oven temperatures, once hard to get, are entirely dependable. Broilers are better, hot heat is more flexible and

By GRACE L. PENNOCK

Household Editor,
Ladies' Home Journal

more easily controlled, and the ranges are easier to use and are better looking all around.

In terms of what this means to the user, ovens that five years ago needed twenty-three minutes to heat to 500° F.—as hot as would ever be needed for anything—now reach that temperature in eleven minutes and take correspondingly less time for lower baking temperatures. Angel food cake bakes in sixteen minutes less time than five years ago and layer cakes in 8 minutes less, according to our records of baking time.

Total baking times have been re-

duced not only because ovens take less time than they did to reach baking temperature, but because of their quicker comeback after the cold food goes in. These savings in minutes total a good many hours in waiting time in the course of a year. Ovens that couldn't be depended upon to hold a steady low temperature of even 300° F., now hold 250° F., which means perfect results with such things as souffles and fruit cakes.

Baking costs are lessened all along the line—.3 of a cent saving on a cake baked, when done from a cold oven, or on an oven meal, and smaller savings on every quart of water boiled—total, \$5 to \$10 savings in the course of a year.

Broilers are uniformly of the

less variety in accredited ranges, and their usable cooking area has been increased as much as 80%, which means that a whole meal can be broiled without shifting food around to get it all cooked, when once it required moving any large steak back and forth to avoid a burned area in the middle and raw edges.

One of the most important features for the convenience of the user is the automatic lighting for ovens and broilers, as well as top units. We have had automatic lighting for top units much longer than 5 years, and in a few ranges in the ovens and broilers, but it is new to have completely automatic lighting the general and expected thing.

The low simmer heat with stop point on the controls is a great convenience. Setting the burner at a very low point used to mean watching the flame as you turned it lower to the right point, and on many ranges, the flame went out before it reached the needed low. Now, with the burner once properly

adjusted, a quick turn of the control and you have a dependable low flame for slow cooking—saves you time and gas as well.

Other features generally available now—formerly only now and then—are oven lights, glass oven doors, lights over the cooking surface and timer controlled ovens. Gas ranges can now be set back against

Miss Pennock ponders a problem at her desk in the Journal Workshop while (below) her assistant, Margaret Davidson, home economist and assistant household editor of the Journal, records the time and gas consumption involved in baking biscuits as well as the quality of the finished product. Picture at bottom shows the staff gathered for a tasting test which is routine for every gas range used in the Journal Workshop



the wall and so will line up with standard kitchen cabinets. One-piece tops and back splashes have added a great deal to the ease of keeping these ranges clean and to their good looks. Oven linings have been made easier to clean. More complete insulation keeps the heat where it's used in the range instead of allowing it to heat up the kitchen.

This isn't by any means a complete list of new features found in today's better gas range. The "CP" seal—meaning Certified Performance—on a range stands for many good points in addition to these.

The push for quality performance and convenience features given gas ranges by the standard setup for this "CP" seal, can be credited with much of the recent improvement in these ranges. It stands for definite quality and is a valuable guide in buying a range.

War and Navy Dep'ts . . . How Gas Supplies U. S. Fuel Requirements

IN the last issue of the MONTHLY I told you about the United States Housing Authority building program. I will now endeavor to tell you of the War and Navy Departments as they relate to the gas industry.

War Department

The gas industry has enjoyed a yearly increasing business with the War Department. The Quartermaster General's Office has complete charge of all building, fuel, and equipment for the Army. Serving directly under the Quartermaster General is another General who has the title of Chief of the Construction Division. There are several junior officers serving under him who have charge of various branches of the service. There is also a corps of civilian engineers serving in the Quartermaster General's Office.

These engineers are the ones with whom we work in connection with fuel and equipment matters. The United States is divided into nine Corps Areas with headquarters in each area commanded by a General, and he in turn has junior officers in charge of the various posts in that particular area.

When the War Department decides to build a new post, flying field, or hospital the civilian engineers draw up complete plans and specifications which are submitted to the Quartermaster General for approval. During the period of drawing the plans and making the specifications, the information as to the availability of the various fuels and the cost is an important factor. If the decision is favorable to gas, the complete lay-out as prepared by the Quartermaster General's Office, together with the estimated annual consumption of fuel and the rate quoted by the gas company is sent to the Construction Quartermaster or the Commanding Officer of the post, who in turn negotiates the contract with the utility company in question.

- Army and Navy posts throughout the nation are using greatly increased quantities of gas as a result of the rapidly expanding defense program. In the accompanying article, Mr. Bean tells how the gas industry fits into this program.
- This article is the second in a series on government activities as they relate to the gas industry. The first article, covering the USHA housing program, appeared in the July-August issue.

By GEORGE W. BEAN

Fuel Consultant, American Gas Association, Albee Building, Washington, D. C.

Gas may be used for cooking in mess halls, where heavy duty ranges are used, laundries, hospitals, dormitory buildings, and official residences for both commissioned and non-commissioned officers. In these individual residences the fuel may be used for cooking, water heating, space heating, and frequently refrigeration.

Master Meters Used

The Quartermaster General's Office always insists on purchasing gas on a master meter basis. Should the army post be located in the natural gas territory the question of whether or not the utility company furnishes and installs the distribution system is an important factor in arriving at the overall cost of fuel. If the distribution system is installed by the utility, the War Department frequently installs meters in the individual residences of officers as they have a stipulated allowance of cubic feet of gas per month. If these amounts are exceeded by officers they are billed for the excess, although I have found that the allowances are very liberal.

The gas industry has felt that in the Army Regulations governing the

uses of gas, which regulations have been in force for a great many years, the ratios used in computing costs of various fuels are not as fair to gas as they should be. We have had many conferences with army officials on this subject and the American Gas Association is now making an investigation of experiences at various army posts under actual operating conditions, and when this investigation is completed it is planned to place the data in the hands of the Quartermaster General's Office for study in the belief that the regulations will be revised.

Gas for Army Posts

My office is working in close cooperation with the Quartermaster General's Office in ascertaining the availability of gas for proposed army posts or flying fields, and War Department officials have been very appreciative of our assistance. To give you some idea of how fast this program is working, I was requested to ascertain whether natural gas was available or could be made available within sixty days at a certain point. I found that it necessitated the laying of a main nine miles in length, which the gas company agreed to run to the property line without charge. It is planned to have this army post in full operation within four months with 30,000 men domiciled there. In ordinary times it would have taken from one to two years to complete a project of that size.

Every year, and more often if necessary, the Quartermaster General's Office advertises for bids on large quantities of all kinds of appliances, writing their own specifications. After a contract has been awarded to the lowest bidder, the War Department instructs the contractor to ship the appliances to various Army warehouses where they are stored for future distribution to new projects or various posts needing replacements of worn out ap-

pliances. These contracts are made for large quantities of domestic ranges, heavy duty ranges, water heaters, space heaters, and other gas-burning appliances.

Under the present defense program there will be many new army posts, flying fields, etc., and practically every existing post will be enlarged to double and in some instances several times its present size. Therefore, we will have a tremendous amount of work to do as the actual sale of gas to the Army should increase during the next year to several times its present size. For the fiscal year 1939 there were 117 Army posts using gas. Forty-two of these used gas for all four purposes, and remaining 75 posts used it for cooking and water heating. The total consumption of gas for all stations for the fiscal year 1939 was 4,079,594,000 cubic feet.

Due to the enormous amount of work in the War Department, and from the fact that the number and location of new projects is yet undetermined it is impossible at this time to give complete information on the future program.

Navy Department

The Navy Department has a somewhat different set-up from the War Department for its fuel matters in that it is divided into three bureaus, namely: the Bureau of Aeronautics, the Bureau of Yards and Docks, and the Marine Corps. While the purchase of all fuels for the War Department is handled through the Quartermaster General's Office, in the Navy Department each of the above named bureaus functions separately with full authority to negotiate contracts for fuels.

The Navy Department uses a tremendous amount of gas in all of its shore activities. The defense program will mean a great many new projects as well as the enlargement of existing ones. My office is working in close cooperation with all three bureaus in assisting them in every possible way in their program.

An interesting incident happened a few years ago when the Navy Department advertised for bids for six large electric annealing furnaces. We were successful in having the bids held up pending an investigation of gas-burn-

ing furnaces. After a complete investigation during which we furnished a great amount of data on the successful operation of gas furnaces, the Navy Department changed its specification and installed three gas-burning annealing furnaces. The Navy Department advises that their operation has been highly successful and now specifies them where their use is most economical.

The Bureau of Yards and Docks now uses gas for various purposes at nine of its shore plants, the largest of which is Mare Island, California, where 1,400,000,000 cubic feet of gas are used annually.

The Bureau of Aeronautics uses gas at five of its flying fields with a total

annual consumption of 166,179,800 cubic feet.

The Marine Corps uses 87,500,000 cubic feet of gas annually at 7 bases.

In closing, may I suggest that where new projects or additions to existing projects are contemplated, gas company officials first determine under which department and bureau the project comes and then file their proposal with the local officer in command. My office will be glad to furnish any information regarding size of project, estimated annual consumption and for what purposes gas could be used if the rate justifies it. In order that I may be of the greatest possible service to the Government and the gas industry it is suggested that copies of all proposals on any project be sent to me.

Utility Advertising Leader Dies



Jay Barnes

JAY C. BARNES, director of advertising for the New Orleans Public Service Inc., New Orleans, La., and nationally known expert in the field of public utility advertising, died last month. He was a past president of the Public Utilities Advertising Association and also served

as Chairman of the Publicity and Advertising Sec. of the American Gas Association.

Mr. Barnes joined New Orleans Public Service Inc. on July 1, 1924. Prior to that time, he was affiliated with the United States Veterans' Bureau, having previously served in the army during the World War. He was active in the Advertising Club of New Orleans and served as its president in 1928. He was also president of the Young Men's Business Club in Oct., 1924.

Practically every civic movement of magnitude in New Orleans found Mr. Barnes with his shoulder at the wheel. His most recent accomplishment was the chairmanship of the Midwinter Sports Association's Sugar Bowl Drive to sell \$550,000 worth of bonds to finance the enlargement of the Tulane stadium to 70,000 seating capacity.

His keen interest in youth brought him the presidency of the New Orleans Council of Boy Scouts of America, and he served in that capacity for several years. Mr. Barnes served several times as Chairman of the Publicity Committee of the Community Chest. He has also been active in

publicity lines with the New Orleans Chapter of the American Red Cross.

His wide activities included the American Legion. He was chairman of the Commanders' Council, and took an active part in the founding of the Alvin Callender Post.

Mr. Barnes also gave much of his time to the New Orleans Association of Commerce. He was a member of the Board of Directors of the New Orleans Civic Symphony at the time of his death and of several carnival organizations.

Coal Industry Ponders Testing Program

THE coal industry thinks well of the American Gas Association's appliance testing program and is toying with the idea of a similar program for that industry judging from editorial comment in the June issue of *Coal-Heat*. The editorial which accompanied a reprint of an article by R. M. Conner, director of the A. G. A. Testing Laboratories, said in part:

"Since 1925, the American Gas Association's laboratories have approved more than 30,000 models of all types of gas-burning equipment. This work has contributed immeasurably to the sale of gas.

"In view of the St. Louis smoke Blitzkrieg and various other factors, *Coal-Heat* feels that the time has come for the bituminous coal industry to investigate, test and approve the equipment in which its fuel is used.

"Since no fuel is any better than the equipment in which it is burned, the coal industry has no choice, today, but to see to it that proper stoves, ranges, furnaces, boilers, stokers, and water heaters are available. These might well carry an approval seal of the National Coal Association, or a 'National Fuel Institute.'"

Homemakers' Quiz . . . Consolidates Customer Goodwill Via Radio

AMONG the women of Detroit, the home service department of the Michigan Consolidated Gas Company has for many years been recognized as a source of competent, trustworthy advice on cooking and home-making problems. Facilities available for this service were greatly expanded last October when a modern air-conditioned auditorium and experimental kitchens were placed in service.

This, in itself, was an outstanding customer-service development, including as it did a beautifully panelled auditorium looking upon a stage or demonstration kitchen and containing, further, three additional model kitchens. CP ranges are used exclusively in the kitchens. Provision was also made for food display cabinets and recipe files containing thousands of recipes, all of which have been tested and approved by our department.

How the Quiz Started

Once this new home service department was available, the question arose, "How will we publicize it?" One of the first considerations was, "What can we do to bring women into this new department so that they can see it, and so that we can have an opportunity to talk to them?" One of the answers was "radio."

A Quiz program was finally decided upon and called the "Homemakers' Quiz." The program was of 15-minute duration and was on the air Tuesdays and Thursdays at 1:15 P.M.

The basic idea of the Quiz was a question-and-answer session. Merchandise prizes, such as percolators, steam cookers, flame-ware, etc., were given for all usable questions sent in, and similar prizes were also given to women in the auditorium audience who answered these questions correctly. Prizes for those who submitted winning questions used in the broadcast were delivered immediately fol-



Miss Hickey and Announcer Franklyn Ferguson of Station WWJ selecting the next person to answer a question and win an attractive merchandise award

By **IRENE HICKEY**

Director, Home Service Department,
Michigan Consolidated Gas Co.,
Detroit, Mich.

lowing the broadcast by our salesmen. These salesmen arranged to ring the doorbell of the winning contestant with her award at the close of the broadcast.

About twenty prizes were given away on each program, ten to the homemaker who sent in usable questions, and ten to those in the home service department auditorium who answered their questions correctly. Names were drawn from ticket stubs deposited in a glass jar which stood on the announcer's table. A second announcer carried a portable microphone through the audience and held an impromptu conversation with each person who was asked a question.

Many amusing situations developed during these conversations. During

the series of broadcasts, the names of several husbands who accompanied their wives to the broadcasts were drawn. They were found to have surprisingly good knowledge of how certain cooking problems should be handled.

Admission was by ticket, the tickets being free and available at neighborhood gas company branch offices, and from all salesmen and home service department personnel.

The series continued seven months. In an auditorium with a comfortable seating capacity of 90 the average attendance crowded the auditorium with a peak attendance of two hundred and six.

Letters containing questions far in excess of the number which could be used were received daily.

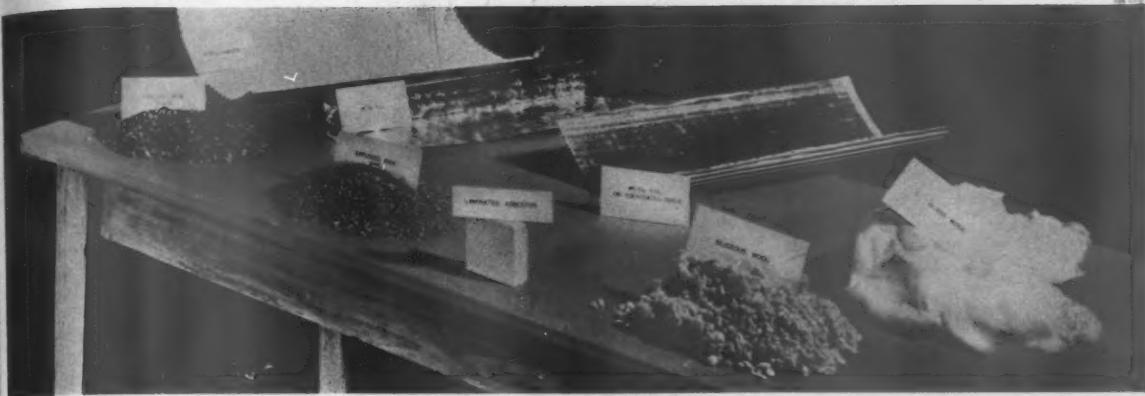
By the time the series of programs was completed, it is indeed doubtful if there was a woman in Detroit who did not know about the new Michigan Consolidated Gas Company's home service department. A short announcement at the beginning of each broadcast called attention to the department and invited listeners to visit it. After each broadcast, the auditorium audience received an interesting cooking demonstration on the CP range.

Gas Appliance Sales Up

GAS appliance sales throughout the United States registered substantial increases during the first six months of this year as compared to sales figures for the same months in 1939, it has been reported by the Association of Gas Appliance and Equipment Manufacturers.

A spectacular rise of 38.5 per cent in the sale of gas-fired furnaces (house heating equipment) was recorded during the period from January through June of this year as compared to the same 1939 six-month period.

Domestic gas range sales rose 13.3 per cent and automatic gas water heaters recorded an increase of 12.7 per cent during the first six months of this year.



Some of materials employed during insulation studies

New Research . . . Bulletins Point Way to Better Gas Utilization



F. J. Rutledge

MARKING the culmination of several years of intensive research under supervision of the Committees on Domestic Gas Research and Industrial Gas Research of the American Gas Association,

four new bulletins embodying considerable original technical data on gas ranges, water heaters, domestic gas burners, and combustion of industrial gas to produce reducing atmospheres have been recently published and released for distribution by the Association.

Material contained in each of these publications, dealing with domestic gas utilization, has been thoroughly reviewed and approved by the Manufacturers' Technical Advisory Committees on Domestic Gas Ranges and Domestic Gas Water Heating. The first group is comprised of a number of experts in the domestic gas range field and has as its chairman Arthur Stockton, president of the American Stove Company. Similarly, the Manufacturers' Technical Advisory Committee on

By F. J. RUTLEDGE

Chairman, Committee on Domestic Gas Research and Committee on Industrial Gas Research, American Gas Association

Domestic Gas Water Heating includes a number of the outstanding technical men in this field and is under the guidance of L. R. Mendelson, president of the Hotstream Heater Company.

Approval of these newly issued bulletins by these committees attest to the high quality and usefulness of the data which they contain. Furthermore, the applicability of results as well as their technical soundness were definitely insured by review and approval of the three bulletins by the Association's Committee on Domestic Gas Research. The bulletin on industrial gas combustion has, likewise, been subjected to careful scrutiny by members of the Committee on Industrial Gas Research, and was approved for publication by this group.

Domestic Gas Water Heating

Bulletin No. 9, "Fundamentals of Domestic Gas Water Heating," may logically be segregated into two classifications; namely, data applying to de-

sign of water heating units, and those covering selection of properly sized water heaters, and their installation for adequate hot water service and optimum thermal efficiency on the consumer's premises.

In the first classification, the research data cover the design of flue and combustion chambers for highest service efficiencies. These are new and original, and provide, it is felt, a rational and simple method of approaching the solution of complex thermodynamic problems associated with the flow of flue gases and heat transfer in flues. Data on flue design are applicable not only to heat transfer problems leading to higher thermal efficiencies, but also to combustion characteristics by permitting the determination of flue sizes and heights necessary for adequate venting of flue gases.

Considerable new information is also given on insulation of external surfaces of water heaters to minimize heat losses. Various types of insulation are considered, as well as different thicknesses and densities of common types of insulating materials. Fundamental relationships between the heat losses through external surfaces and service efficiency characteristics of auto-

matic storage water heaters are also developed.

Supplementing heat loss data is new information on heat losses from piping. This subject involves, of course, a problem of installation rather than heater design, and as such should be useful to utility engineers as well as manufacturers. This section of the bulletin covers comprehensively the effect of length of piping, size of piping, material of which piping is constructed, and other important considerations.

One of the outstanding features of the water heating research is the thorough consideration given factors contributing to the heat losses of automatic storage water heaters during standby periods. These data, when correlated with other results on insulation and flue design, reveal many gov-

erning principles covering such losses and, in addition, indicate means of reducing them to a minimum.

Bulletin No. 9 includes a complete presentation of data on service efficiency characteristics of automatic storage gas water heaters. Devoted to the development of a new method of selecting automatic storage water heaters which will deliver predetermined hot water requirements with the highest service efficiency, this section may well develop into an outstanding technical contribution. It has generally been appreciated that certain types of heaters would produce a given hot water requirement at an appreciably higher service efficiency than other sizes or types of storage heaters. However, this generality has been reduced to accurate solution of specific problems, and it has been found, for ex-

ample, that with contemporary quick-recovery heaters a difference in service efficiency as high as 35 to 40% between two differently sized heaters may result for the same daily hot water requirement.

In other words, it seems reasonable to conclude that for the near future, at least, more can be done in the way of reducing consumers' gas bills for water heating by proper selection of a heater for a given job rather than by redesigning heaters for higher thermal efficiency and lower standby losses. It is hoped that the industry will take advantage of all new data presented in this bulletin, together with the vast fund of knowledge previously accumulated, to improve not only installation practices but the design of heaters as well.

Atmospheric Gas Burner Design

The second research publication previously referred to (Bulletin No. 10, "Fundamentals of Atmospheric Gas Burner Design") covers atmospheric gas burners, and is unquestionably the most complete technical report that has ever been published on this subject. Underlying data for this publication were obtained from investigational work conducted in connection with both the domestic gas range and gas water heating projects. Results, therefore, are primarily applicable to these two types of appliances. However, in many respects data are equally useful for the design of all types of atmospheric gas burners employed on domestic appliances.

The burner design bulletin is introduced with a review of fundamental principles as abstracted from literature, the theory of combustion of gas in atmospheric burners, and other combustion data. Also included are the physical and burning characteristics of typical fuel gases distributed in the United States and Canada, and the effect of such characteristics on primary air injection. Other burner design factors are likewise treated from a fundamental standpoint.

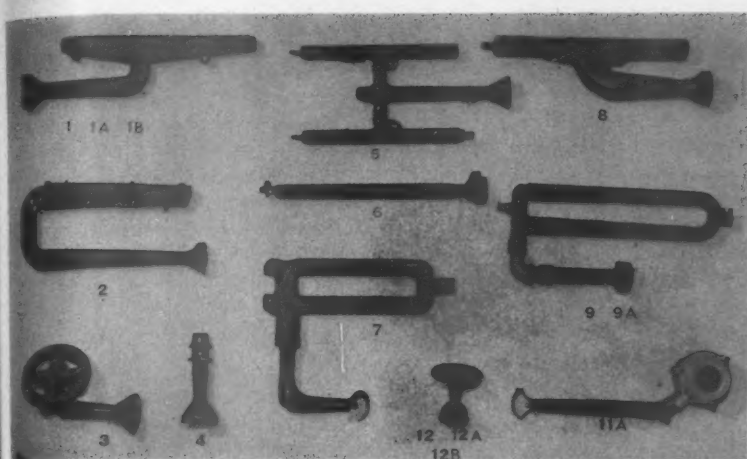
Continuing from this broad introductory material, specific data are presented on a new method of determining maximum gas rates which can be satisfactorily employed on a burner of a given size, or in other words, the



A. G. A. precision test burner employed for determining burning characteristics of fuel gases

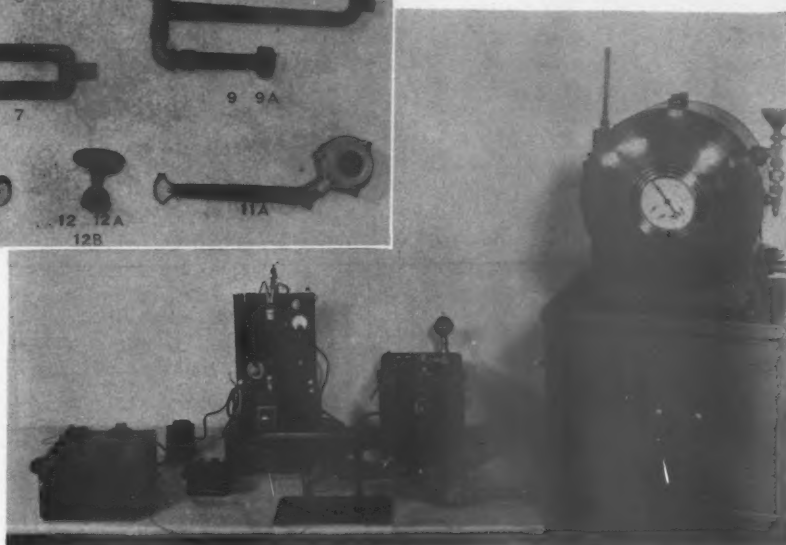


Some of the flue baffles and equipment employed for determining effect of flue height, diameter, and baffling on water heater performance



Left—Some of the burners employed during the study of noise of extinction

Below—Equipment used for investigating occurrence and magnitude of noise of extinction



selection of a suitably sized burner for a given gas rate. This material covers the design of burners for specific gases, such as manufactured gas, natural gas, or liquefied petroleum gases, as well as burners for use on more than one type of fuel gas.

The presentation continues by showing appropriate port sizes as well as the number of ports required for a given capacity and a given application. These elements, namely, port size and number of ports, are also correlated with essential burner operating characteristics, such as flame travel, flash-back, and flame stability.

Inasmuch as primary air injection is one of the important controlling factors of burner design, considerable attention is given to design of burners from the standpoint of obtaining optimum primary air entrainment under predetermined conditions of performance. This section of the bulletin, therefore, presents data showing optimum relationships between primary air entrainment and throat area, port area, primary air opening in mixer faces, and distance between orifice and throat. Other factors affecting primary air injection, such as the internal finish of mixers (rough or smooth), temperature of burner head and mixing tube, and combustion chamber pressures, are also considered.

One of the most interesting portions of the burner design bulletin comprises original data on design of burners for quiet performance. This chapter considers the important sources of burner noise; namely, combustion

noise, flash-back or lighting-back, orifice noise, air aspiration and mixing noises, and noise of ignition and extinction.

The most important aspect of this work, however, was confined to the last-named characteristic, noise of extinction, since it has been one of the most troublesome of our problems and has apparently presented the greatest difficulties in design. This phase of the work involved a new and rational method of approach. All of the data obtained, as well as the relationships established, were utilized in developing a mathematical expression by which the propensity of the burner to produce noise of extinction under any given set of operating conditions may be calculated.

This equation takes into consideration the average diameter of the mixing tube, total port area, length of mixing tube, area of individual ports, and the absolute temperature of the mixing tube. Appropriate values for these variables are then substituted in the equation, and the resultant value will then indicate, by use of a suitable

graph, the maximum percentage of primary air which can be injected without producing noise of extinction. With these data, it has been found possible to determine accurately the expected noise of extinction characteristics of a burner prior to its actual fabrication and application in an appliance.

Another part of Bulletin No. 10 presents results of comprehensive studies on the capacity and air injecting characteristics of fixed and adjustable orifices. These data are, in general, also original and bring out for the first time many features of orifice design which have an important bearing on the two above-mentioned characteristics. This section contains convenient tables which were developed to facilitate accurate selection of suitable orifice sizes for any gas and pressure.

Domestic Gas Ranges

Bulletin No. 8 on domestic gas range research, which has just been released, supplements a previous one on this same subject. The new one includes not only data which are a sum-

marization and interpretation of the results obtained since issuance of the first bulletin, but also contains a general summary of the material contained in the first publication.

Of the considerable amount of new data presented, probably the most outstanding and useful is that pertaining to the design of oven and broiler sections for optimum efficiency and speed of operation consistent with satisfactory combustion under typical field conditions. This portion of the bulletin covers the effect of all-important variables of oven design; such as flue outlet areas, secondary air openings, openings in the oven bottom or side linings on combination oven and broilers, openings in top linings, and distances between flue outlet openings and burner ports or secondary air openings.

These numerous data have been resolved into an empirical formula by means of which the minimum flue outlet area required for adequate secondary air to provide complete combustion, may be calculated. Recommendations are also given on proper proportioning of other essential dimensions which influence oven maintenance rates, preheating input rating, preheating speed, and satisfactory combustion. Hence, this publication provides for the first time a rational method of solving oven design problems.

Color Variations Studied

An interesting portion of the new bulletin on domestic gas ranges is that dealing with an original method of accurately measuring color variations of baked products. This method involves use of a special reflectometer which in effect substitutes an electric eye for visual observation. While this new method of instrumentation is not directly related to design problems, its use provides a sensitive means of controlling oven design work, and will, in time, undoubtedly provide a common basis for evaluating oven performance.

It is hoped that investigational work on the domestic gas range research project can be continued to include fundamental studies of the principles governing evenness of heat distribution. It is to be noted, however, that the first logical step in this direction

has been retired by development of the reflectometer by which the progress of this type of research could be accurately gauged.

The equation previously referred to was also extended to apply to separate broiler sections. This achievement together with data covering other factors of broiler performance, as brought out in Bulletin No. 7, provides a complete basis for designing broilers for optimum speed, economy, and broiling performance.

The final chapter of the new bulletin on gas range design covers top sections. New and original data are presented showing effect of top section design features on combustion, and efficiency performance under extreme conditions of utilization.

The objective of this work was to define those principles which, when applied in range top section design, would provide sufficient flexibility in performance to permit utilization of wash boilers, and other special utensils, and yet secure satisfactory combustion, and without impairing thermal efficiency characteristics when regular kitchen utensils are employed. This objective has been fully attained, and the bulletin contains a detailed summary of the proportions and dimensions of various essentials of top section design which must be adhered to

in obtaining the necessary degree of flexibility.

A number of other items in the bulletin will be of value and interest to manufacturers, and to those utility men interested in domestic gas utilization. They cover, in general, the performance of smokeless broiler pans, operation of safety devices in separate broilers, effect of input rate on broiling speed, economy, and others.

Composition of Furnace Atmospheres

A new bulletin entitled "Composition of Furnace Atmospheres Resulting from Partial Combustion of Gaseous Fuels" contains original data showing relative concentrations of the different flue gas constituents resulting from combustion of three different fuel gases, encompassing nearly the entire range of variations in typical city gases when the air supply was varied from that theoretically required for complete combustion to the lowest which would support combustion.

Special sections are devoted to a discussion of carbon monoxide-hydrogen ratios, carbon monoxide-carbon dioxide ratios, and occurrence of free oxygen in flue products. Effects of both combustion tube wall temperature and flue gas temperature on composition

(Continued on page 327)

Double Feature Gas Attraction



Carole Landis, one of Hollywood's topnotchers, steps off the lot long enough to pose in the company of two gas appliances used in the kitchen setting of the Hal Roach-United Artists picture "Turnabout"

Statistics Prove . . . Electric Cooking

Gains Limited to Non-Gas Territory

THERE is much loose talk to the effect that sales of electric ranges are increasing so fast that it won't be long before the housewives of the nation "kook with kilowatts." The source of such talk is readily traced to the declining sales ratio of gas over electric ranges since 1929. This, however, is merely a surface conclusion, contrary to the situation as it actually exists in the gas range field. A basic comparison should serve to silence those who are previewing the ultimate collapse of the gas cooking load. Furthermore, it should reaffirm the fact that the overwhelming public acceptance for gas ranges, where gas is available, is as evident today as it was in 1929.

Sales Ratio Misleading

Employing the figures demonstrating the ratio of gas range to electric range sales, we find that gas ranges in 1929 outsold electric ranges by a margin of 10 to 1. In 1939 this figure decreased to approximately 4 to 1, a decline of 61.4% in the ratio. Naturally, when sales are relatively small, as in the case of electric ranges, any sales will show large percentage increases—for example, if two ranges are sold this year against one last year, the increase is 100 per cent.

At the end of 1939 the electric utilities were serving 24,599,284 residential customers. Of this number, 2,510,000 used electric ranges, giving a saturation of 10.2%. The gas industry had connected to its lines 16,542,500 residential customers, 16,491,000 of whom used gas ranges, or a saturation of 99.7%. In 1929, of the electric industry's 20,145,774 residential consumers, 875,000 used electric ranges, a 4.3% saturation. Comparable figures for gas indicate that approximately 100% of the 14,798,700 customers used gas ranges.

What do these figures indicate? They indicate simply that the lack of variation in saturation of gas ranges

- Make no mistake about it, the gas range is still queen of the kitchen despite frequently voiced opinions to the contrary. As Mr. Martin shows in the accompanying analysis, the electric range has made remarkable gains but, most significantly, *not* in the territory served by gas.
- This study shows that the preponderance of electric cooking gains has been registered beyond the gas mains and that gas cooking has not only held its own in the past decade, but has forged ahead with new customers and increased popularity.

By EDWARD R. MARTIN

Assistant Statistician, American Gas Association

has left our markets intact over this period of years. In other words, the increase in electric range sales has made little if any inroad into territory where gas is served.

Let us, for a moment, deal with the actual increases registered by these two services in their residential phases.

Electric residential customers in

1939 totalled 4,453,510 more than they did in 1929. There are 1,635,000 more ranges in use. Hence, 36.7% of these additional customers purchased electric ranges. Yet, it is interesting to note that of this gain in customers, 1,209,832 were classified as farms. While the electric industry increased its total residential customers by 22.1%, the number of farms served registered an increase of 210% over and above 1929. Here, then, has been a fertile field cultivated by the alert merchandisers of electric ranges—rural territory—where gas service is generally not available.

Gas, The People's Choice!

Gas for residential use in 1939 also produced gains over 1929. There were 1,743,800 more residential customers using gas than there were in 1929. During this period there was a gain of 1,690,000 gas ranges, indicating that 96.9% of these new customers chose gas for cooking rather than any other available means. This further illustrates that gas is still the people's choice. To emphasize the stability of

Ratio Gas Range Sales to Electric Range Sales		No. of Electric Residential Customers		No. of Electric Ranges in Use	Electric Range Saturation
1929	10.1 to 1	1939	24,599,284	2,510,000	10.2%
1930	7.6 " "	1929	20,145,774	875,000	4.3%
1931	8.6 " "				
1932	10.5 " "	Increase	4,453,510*	1,635,000	36.7%
1933	14.2 " "	22.1% Increase in Electric Residential Customers.			
1934	6.9 " "	186.9% Increase in Electric Range Users.			
1935	5.2 " "	* Of this increase 1,209,832 were farm customers, the figure represents an increase of 210.0%.			
1936	4.6 " "				
1937	3.5 " "				
1938	3.7 " "				
1939	3.9 " "				
		No. of Gas Residential Customers		No. of Gas Ranges in Use	Gas Range Saturation
		1939	16,542,500	16,491,000	99.7%
		1929	14,798,700	14,801,000	100.0%
		Increase	1,743,800	1,690,000	96.9%
			11.8% Increase in Gas Residential Customers.		
			11.4% Increase in Gas Range Users.		

NOTE: These data are compiled from general information made available by the Gas & Electric Industries.

gas for residential cooking use, it should be noted that the percentage increase, 1939 over 1929, was 11.8%. Gas range users show an increase of 11.4%.

Important too is the fact that figures applying to gas show an absence of fluctuation. While increasing its customers, the gas industry has increased its range sales. Distinct gains are in evidence—slow, steady progress, with markets and saturation maintained as additional load was taken on. Far from being eclipsed, gas ranges are as much in the picture as they were in 1929. Saturation figures definitely prove the enduring strength of our markets!

Electric range manufacturers have been employing extensive advertising campaigns during the last several years. The success of these is reflected by the additional 187% of electric range users. But—there is still no skin off our nose!

Electric Gains in Rural Areas

The fact that we have maintained our ascendancy in the domestic cooking field and have done this in the face of substantial gains in sales of electric ranges might need some explanation. It is all simple enough, however. Look back and see how much greater is the increase registered in farm service than in electric customers as a whole. Note the proof that our market is still intact. Does not this clearly indicate just where the great bulk of electric range sales has been and is being made?

The gas industry serves approximately two-thirds of the population. This portion recognizes the superior and inherent advantages of gas as a cooking fuel, today as in 1929. Where, then, have electric ranges made their climb? The answer is, with one-third of the population that is without benefit of gas service.

Gas Output Rises

GAS output in July of the Montreal Light, Heat & Power Cons., Montreal, showed the best gain in some time, rising 18,652,000 cubic feet, or 5.15 per cent, to 380,681,000 cubic feet. For the first seven months of this year, gas production was 2,934,748,000 cubic feet, up 84,080,000 cubic feet, or 2.95 per cent, over the corresponding period of last year.

Finds Roll of Bills in Gas Furnace



How to uncover a bankroll—in one lesson—by Larry Mullen

THE Connecticut Light & Power Co. recommends gas-fired heating systems very highly—but not as safety deposit boxes.

Larry Mullen, gas serviceman for the Company in Waterbury, Conn., was making a routine inspection of a gas furnace in the basement of a Waterbury restaurant recently and cleaning it in preparation for the winter season, the usual service rendered free each summer.

In checking the furnace flue, he saw what appeared to be the corner of a dollar bill. Reaching in, he felt a roll.

Mullen went to the restaurant's cashier, since the manager was out at the time, and had her accompany him while he withdrew the roll of bills. They counted out \$720!

A few minutes later while Mullen was still working on the furnace, the restaurant manager returned and went to the basement to change his clothes, without seeing the cashier. When he found Mullen cleaning the furnace he turned a sickly white.

"Did you light the gas?" he asked in a weak whisper.

"Not before I found your money and gave it to the cashier," Mullen replied.

Booklet Tells Story Behind Gas Bill

IN an effort to reduce to an absolute minimum any misunderstanding, of monthly gas and electric bills, the commercial relations department of the Consolidated Edison Co. of New York has issued about 300,000 copies of a booklet called "The Story Behind Your Electric and Gas Bill," which is being distributed to customers.

The records of the commercial department show that most of the complaints from customers are concerned with bills which they consider to be too high. Most of these complaints, according to the record, are based on a lack of understanding of what causes variation in consumption from month to month and the customer's in-

ability to check his own meter readings and bills before making a complaint. This new booklet is designed to clear up any such misunderstanding.

One of the most important things in the booklet is a two-page "spread" showing a representative customer's bill with a full description of every item which appears on it—from the telephone number to call to make inquiries, to an explanation of the City Sales Tax.

Some of the subjects covered in the booklet include:

Your gas meter.

The man who reads your meter.

How to read your gas meter.

Why your electric and gas bills vary from month to month.

Weather makes a difference:

Seasonal changes, cloudy and dark days.

Weather affects use of your appliances.

Adding new appliances.

Why gas bills go up or down.

Why are you requested to pay your electric and gas bills promptly.

When you move.

"All American" Gas Range Makes Bow



New model gas range

ONE of the most recent developments in gas range design is the new "All American" model Magic Chef gas range which embodies many improvements over older models. Specifications for the new model were based on a survey of 88 questions sent to outstanding home economists throughout the country, according to Stanley E. Little, vice-president of the American Stove Company.

The new range is larger and roomier despite the trend of smaller families and compact kitchens. It has more top area, larger broiler and oven and two disappearing back shelves which may be pulled out when needed. Other new features include smartly designed oven vent grills, with a minute-minder. The All American model meets CP specifications and will be made the focal point of a fall promotional campaign.

Tact in Contact . . . Use of Sound

Slide Films in Employee Training

GROWING competition, political attacks and increased awareness of customer reactions have made better public relations more important than ever to public utilities. It is "good business"—for the present and for the future—to set about, methodically and systematically, to earn the public good will.

Some time ago the Boston Consolidated Gas Company came to fuller realization of this important need. It concluded that its best method of earning public good will was to give its customers gas service when and where they want it—but the company also understood that *how* this service is rendered could be of prime importance, and that a great deal could be done in this particular field.

As a result, a program was carefully outlined for training all employees who come into contact with customers.

Effectiveness of Films

There are many elements in the program finally decided upon—a customer relations training course, lectures by a professional instructor, sponsoring and encouraging of salesmanship on the part of all its employees, safety talks and many other phases that go to make up the program. But we are chiefly concerned here with the use that has been made of sound slide films in this program and what the effect of these films has been.

First, let us consider the films, which were produced by a film corporation specifically for use by gas utility companies. They deal generally with the problem of contacts between the employees of the gas company and the public and are about fifteen minutes in length, comprising a series of pictures accompanied by the voice of a commentator. The titles of the four films used by the Boston Consolidated are:

The accompanying article is published at the request of the Committee on Personnel Practices. Information on the slide films mentioned may be secured from the American Gas Association.

By J. J. QUINN

Sales Manager, Boston Consolidated Gas Co., Boston, Mass.

Our Biggest Job—explaining the importance of making a good impression upon the customer;
The Right Start—showing the employees the fundamentals of getting off on the right foot;
I'd Rather Be Right—impressing the importance of giving accurate and complete service to the customers;
It's Tact in Contact—emphasizing the best ways of handling the public.

It is our present intention to show all four films to all employees before the program is finished. Although it will be some time before each employee will have seen all the films, enough have seen at least part of them so that we are able to observe some effects and draw a few preliminary conclusions. It has been found expedient to show the films to small groups of employees of from fifteen to twenty persons at a time. This is partly because the employees can be more easily assembled in small groups without disturbing the routine of the company, and partly because it was felt that maximum effectiveness would be achieved by the use of small groups.

The films have been used in conjunction with the Customer Relations Training Course conducted particularly for application and investigation clerks and also have been shown for the benefit of meter readers and service men at safety meetings. In general, the procedure has been to show only one film at a meeting and then to have the person in charge give a brief

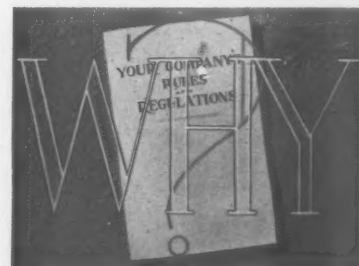
resumé of the film, thus calling the attention of the employee to the more salient features. The meetings are held at definite intervals.

In the first place, the films have served to bring home to the employees things that they have been missing on the job. An example of this is that the men are shown the importance of observing the every day courtesies in dealing with the public, such as removing one's hat when a lady comes to the door. It is said that example is the best teacher, and when the men see in pictures how their particular job should be done, they come to a realization of their own faults and shortcomings, and try to correct these faults. It is always easier to show a person how a thing should be done than to try to describe it or write about it. It is here that the films have proven of particular value.

A second point that the films brought



Here are five important things for any employee to do



Why people want to know the reasons behind company rules is brought out in one film



When an employee says, "I wouldn't know anything about that, it isn't in my department," poor public relations are being bred

out for the benefit of the employees is that the employees themselves represent the whole gas company. In most cases, the only contact that the public has with the company is through meter men, service men, and cashiers, who themselves may not consider that they have an important function to perform. Each man is, of course, an important medium in building good will and improving acceptance of the company's services.

Problems peculiar to the different types of work are treated. For instance, the best methods of handling customers who complain about high bills are visually demonstrated. It is shown how an unpleasant or tactless answer may do much to undermine the customer's good will toward the company. Through the films the men see why the tactful approach bears fruit. The films also demonstrate clearly why cooperation between departments is necessary for the general good.

Employee's Attitude Improves

Finally, we feel that the sound slide films are important in improving the employee's attitude toward his job. If an employee likes his work and gets enjoyment out of doing his job well, he will give more of himself to that work. Also, the public will be served by a courteous, tactful employee.

We are not yet in a position to judge what the final effect of these films will be. Not all of the employees have yet seen the whole series. However, we have begun to see some results, particularly among the younger employees, who are taking the films' lessons to heart and are already profiting by them. The least the films can do is to start the men thinking about their work, and such thinking



Taxes and investment need to be explained to both employees and customers

always promotes valuable discussion.

In conclusion, we believe that sound slide films are having a decidedly beneficial effect upon the employees of the Boston Consolidated Gas Company and that they should be an integral part of any customer relations training course. Our company is expecting a great deal from them.

Helium Produced in Large Quantities

THE world's only operating helium plant—maintained by the United States Government near Amarillo, Texas—has completed producing 100 million cubic feet of helium, Secretary of the Interior Harold L. Ickes has been advised by the Bureau of Mines.

The plant is ready and prepared to meet any demands probable for helium from the United States Army or Navy in the national defense program it was stated. Figures just compiled show that the Government plant has produced 100,012,000 cubic feet of helium during its operating life of a little more than eleven years. Even this production is less than 50 per cent of the potential output for an equal period if the plant were run at its rated capacity. Altogether, the Government has produced nearly 150 million cubic feet of helium, as 48 million cubic feet were produced at Fort Worth, Texas, before the Amarillo plant was placed in operation.

New Challenge to Camera Fans

THE American Gas Association offers a new and different challenge to amateur photographers through a nation-wide contest for the best photographs of up-to-date, attractive kitchens which show modern gas ranges.

The contest closes midnight, December 1, 1940 and prizes are as follows: First prize \$250.00; second prize \$100.00; third prize \$50.00; and twenty additional prizes of \$5.00 each.

This contest offers an opportunity for the amateur to test his or her photographic skill, knowledge of composition and lighting effects, and the ability to take an indoor shot of a difficult subject—the kitchen. Sharp lines and hard gleaming surfaces, plus the fact that it is inclosed within four walls, make a kitchen more than ordinarily difficult to photograph.

There are many smart kitchens throughout the country in which some 3,000,000 modern gas ranges were installed within the last two years.

Complete contest details may be obtained by sending a postcard request addressed to: The Kitchen Contest Editor, American Gas Association, 420 Lexington Avenue, New York, N. Y.

Some of the contest rules are:

Eligible to any amateur photographer in the U.S.A. with the exception of employees of the gas industry and their advertising agents.

The photograph must be of an attractive modern kitchen showing a modern gas range not over two years old; and be taken without any model (person) in it.

Photograph must be an unmounted black and white glossy print, 8 x 10 inches. It

should be protected by cardboard to prevent breaking in the mails.

It is agreed that winners of prizes loan the negatives of their pictures to the American Gas Association for a period of two months for use in publicity and its own photographic service. In addition to the prize-winning entries, the Association will select photographs suitable for the same purposes and will pay \$2.00 for the negative of each print selected. The decision in this selection will be final.

No prints submitted can be returned. No correspondence concerning prints can be entered into. Please send no other material, merely the print with your name and address, and the written consent of the owner of the kitchen.

Gas Water Heating Campaign Pending

PLANS for national promotion of gas water heaters in 1941 will be discussed at a meeting of the Gas Water Heater Division of the Association of Gas Appliance and Equipment Manufacturers to be held at the William Penn Hotel, Pittsburgh, Pa., on September 10.

A report of the sales promotion committee of the Division will be made to the meeting reviewing activities carried on since the beginning of the year. Matters relating to laboratory activities and market trends are also scheduled for discussion.

L. R. Mendelson, chairman of the Gas Water Heater Division and president of the Hotstream Heater Co., of Cleveland, Ohio, will preside.

Third Appalachian Gas Measurement Short Course Is Outstanding Success



B. P. Stockwell

THE Third Appalachian Gas Measurement Short Course was held in Morgantown, West Virginia at the State University, August 19-23. It was the largest school of this kind yet held in Morgantown, and definitely demonstrates the growing interest in an educational movement of

this nature.

The school last year was attended by 377 measurement men from various oil and gas companies in the Appalachian area as well as from surrounding states. These men came from 21 states, the District of Columbia, and the Dominion of Canada. This year, due to earlier and more general advertising efforts, approximately 500 men attended.

The program this year included a large number of speakers, the majority of whom are operating men. In fact this year's program probably contained more speakers and covered more gas measurement and pressure regulating subjects than were heretofore covered by any annual session of a gas measurement short course in the Appalachian area.

72 Papers on Program

The program this year included 72 addresses and technical papers. Forty-one of these subjects were handled by utility engineers and measurement men, who daily come into contact with the problems they discussed at the school. Twenty-three of the speakers on the program were representatives of gas measurement and pressure regulating equipment manufacturers. These men, most of whom are highly capable engineers with the companies they represent, answered any technical questions regarding operation, construction or design of the equipment furnished by their company. In addition to this, they brought with them large exhibits of the various types of gas measurement and pressure regulating equipment manufactured by their respective companies. Such equipment not only was on display, but in a number of cases parts of it were in actual operation.

In addition to the representatives of oil and gas companies and the equipment manufacturers there also appeared on the program, four University men, and four Public Service Commission men, all of whom likewise are highly capable in their respective lines of endeavor.

The school this year, under the capable leadership of its General Chairman, Ray W. Hinchman, of the United Fuel Gas Com-

By B. P. STOCKWELL

*Chairman, Program Committee, and
Natural Gas Engineer, Public Service
Commission of West Virginia*

pany, was not only favored by an exceptional program from the viewpoint of the number of speakers, but was also favored by being able to present on the program, a number of the outstanding authorities on gas measurement and pressure regulation. On the program this year were such men as Walter C. Beckjord, President, American Gas Association; C. R. Bellamy, Vice-President, Columbia Engineering Corp.; Thomas R. Weymouth, Vice-President, Columbia Gas and Electric Corp.; John Diehl, Chief Engineer, American Meter Company; A. D. MacLean, Chief Engineer, Pittsburgh Equitable Meter Company; Dr. Paul Price, State Geologist, West Virginia Geological Survey and many other capable executives and measurement engineers of the gas industry.

School of Information

The Appalachian Gas Measurement Short Course is not a convention, but is strictly a school for the purpose of furnishing up to date and practical information regarding the proper operation and use of gas measurement and pressure regulating equipment. During the three days' course there are only two general sessions. One occurring on Monday morning, and the other on Tuesday morning. Each afternoon from 1:00 to 5:00 P.M. and Wednesday morning from 9:00 to 12:00 A.M. is devoted to class room work. At this year's school there were six classes in session each hour. The subjects covered by these six classes were diversified so that each man attending the school could select a class for that hour that covered the subject in which he was most interested.

These classes ran for one hour and fifteen minutes but only about half of this time was consumed by the director or speaker in the delivery of his paper or address and the balance of the time was devoted to class room discussion of the subject at hand. This procedure permitted each man attending the school to ask any questions he desired and also to express his opinions and relate his experience regarding the use and operation of the equipment under discussion.

While this school is only two years old, this being the third session, there is very definite evidence of the good it is doing throughout the Appalachian area. The gas measurement and pressure regulating men who have attended the school have taken home with them new and better ideas which they have placed in operation in their respective companies, and thereby developed increased efficiency in the measurement of

gas and regulation of pressure, as well as producing additional economies for the companies by whom they are employed. This condition is definitely demonstrated by requests from superintendents asking their company managements to send more of their men to the school this year than were permitted to go last year.

Houston Mothers Vie in Cake Baking



These kiddies at Faith Home think the cake-baking contest is one of the best ideas anyone ever had

COMBINING civic spirit with sales promotion, the Houston Natural Gas Company has developed a unique and effective cake-baking contest which is held annually on Mother's Day. The last Mother's Day Contest on May 10 reached a high point in these annual events when 498 cakes were delivered to the company's shopping center by the mothers of Houston, more than double the number entered in 1939.

The contest attracts widespread interest, not only because of the attractive prizes offered, but also because the cakes are distributed to orphans, aged and underprivileged persons in local institutions, thus adding to their enjoyment. An estimated 3,000 persons were able to enjoy home-baked cake on last Mother's Day as a result of the event.

In addition to the company, 25 dealers participated in this year's promotion. Winner of the first prize, a \$189.50 CP gas range, was a bride of four months. Other prizes awarded were a \$99.50 gas range, 2 cash prizes of \$15 and \$10 and 24 merchandise food baskets.

Jessie McQueen, home service counsellor for the American Gas Association, joined two local culinary experts in judging the event.

Brooklyn Gas Experts Receive Promotions

THREE important appointments were announced recently by The Brooklyn Union Gas Company, Brooklyn, N. Y. All three appointees have been prominently identified with Technical Section activities of the American Gas Association and are well known throughout the gas industry for their valuable contributions.

Ansel B. Huyck, formerly assistant engineer of manufacture, was made engineer of manufacture, filling a vacancy created last December when Harry L. Nickerson was elected chief engineer.

Samuel Green, formerly works engineer, manufacturing department, was made assistant to engineer of manufacture.

Edward J. Murphy, formerly assistant chief chemist, was appointed chief chemist, a post made vacant July 1 by the retirement of Edward C. Uhlig.

Mr. Huyck was born in Sheridan, N. Y., and is a graduate of Rensselaer Polytechnic Institute. His service record dates from November 26, 1928, when he was made assistant superintendent of the Greenpoint coke oven plant. On June 24, 1931, he was made superintendent of the coke oven plant and on October 1, 1937, assistant engineer of manufacture. Mr. Huyck was chairman of the A. G. A. Carbonization and Coke Subcommittee in 1934-1935 and was a member of the Gas Production Committee for several years.

Mr. Green, a native of Brooklyn, was graduated with a mechanical engineering degree from Brooklyn Polytechnic Institute. He joined Brooklyn Union on May 8, 1912, as a clerk. After serving in the World War, he returned on January 8, 1919, as superintendent's assistant at Metropolitan works. On July 1, 1927, he was appointed

assistant superintendent of Citizen works and on March 1, 1939, was made works engineer. He is chairman of the A. G. A. Water Gas Subcommittee.

Mr. Murphy was born in Brooklyn and educated at Pratt and Brooklyn Polytechnic Institutes. He entered the company's employ on July 5, 1905, as assistant chemist. On February 23, 1924, he was made assistant chief chemist. He was chairman of the Association's Chemical Committee in 1932-1933 and is a member of the Gas Conditioning Committee.

Survey Throws Light on Salesmen's Pay

RESULTS of a recent survey of the Domestic Sales Committee of the Pacific Coast Gas Association indicate that the average gas company salesman earns a wage well above the national average. Fourteen companies with a total of 279 domestic salesmen reported average earnings of \$2,253 per year for each salesman.

Of the companies reporting, four pay straight salaries, one a salary and a bonus and nine salary and commission. Total compensation paid averages 66.2% salary, 30.6% commission and 3.2% bonus and prizes. Four companies furnish automobile transportation and two have no transportation provision of any kind. The other companies compensate salesmen for the cost of operating their own cars, the allowance ranging from \$12.50 to \$40 per month, depending upon the character of the territory covered. Incidental expense accounts are authorized by only two companies.

In spite of the widely different methods employed to rate salesmen's accomplishments and the differences in market conditions, the actual earnings of the salesmen were surprisingly uniform, it was revealed.

"Today's Home" Aids Gas Companies

DIRECT and forceful aid in a seasonal drive for automatic gas water heater sales is credited to the private magazine, *Today's Home*, by gas companies using it.

To support the drive, the publishers of the magazine, Evans-Winter-Hebb, Inc. of Detroit, Michigan, devoted the entire center spread of a recent issue to a spectacular advertisement of automatic gas water heaters. Advantages were dramatically pictured and the reasonable cost of the service was stressed.

Provision was also made for each company to localize the advertisement by featuring special terms and prices. Surrounded by the other pages of the magazine devoted to homemaking articles, recipes, menus, and promotion of gas for all the big jobs in the home, the center-spread advertisement registered with unusual force.

Both as an educational medium and an aid to immediate sales, the magazine is proving a boon to companies as a foundation for local advertising in support of the industry's nationwide program. Each issue contains a well-balanced selection of homemaking articles and pictures. Typical of these was an article by Major Alexander Forward describing the activities of the Testing Laboratories of the American Gas Association. Another article about the Laboratories is to appear soon.

Four pages in each issue are available in each company for local advertising or local editorial material. These advertisements tie in closely with the A. G. A. national advertising program promoting gas for the four big jobs.

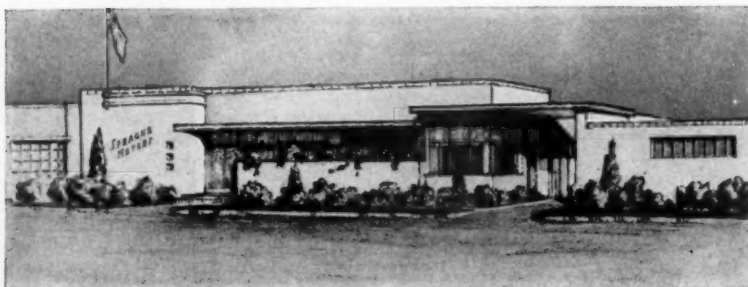
J. A. Norcross Dies

J. ARNOLD NORCROSS of New Haven, Conn., widely known as an engineer in the construction and operation of illuminating gas plants, died August 19.

Born in Derby, Conn., December 27, 1869, he was graduated from the Stevens Institute of Technology in 1891. He immediately began his business career as chief engineer with the Consolidated Gas Company of New York and was made a superintendent of construction for the War Department in 1894. He directed the building of entire new gas works for the West Point Military Academy.

After several years spent in the direction and erection of gas plants in London and other cities in Europe and in Shanghai, he became associated in 1903 with the New Haven Gas Light Company as chief engineer. He was elected secretary-treasurer in 1905 and vice-president and general manager in 1926, retiring twelve years ago, but continuing as consulting engineer.

New Sprague Meter Warehouse



New Los Angeles branch and warehouse of the Sprague Meter Company which will open September 21 immediately following the Pacific Coast Gas Association's annual convention. Visitors at the convention have been invited to inspect the new building which will serve Colorado, Wyoming and Montana. Located in the Hostetter industrial tract, it contains 15,000 sq. ft. of floor space and is modern in every respect. E. H. Rosenberry, vice-president of the company and manager of that division, will welcome visitors.

AFFILIATED ASSOCIATION

Activities

Empire State Gas and Electric Association



E. P. Prezzano

THE annual convention of the Empire State Gas and Electric Association will be held on September 26-27 at the Westchester Country Club, Rye, N. Y. Important and timely subjects pertaining to the management of gas and electric utilities will be discussed by prominent speakers.

Among those already on the program are: Chairman Milo R. Maltbie of the Public Service Commission; Walter C. Beckjord, president of the American Gas Association; Edward P. Prezzano, president of the State Association; H. E. Babcock, chairman of the Board of Trustees, Cornell University, and others.

Subjects to be discussed will include: Problems of the Gas Industry, Association Policies and Activities, National Defense, Money Markets, Utility Regulation, Economic Trends, Rural Electrification and others.

A golf tournament will be held on Thursday afternoon, September 26. Other entertainment will include contests for the ladies, motor trips, a dinner dance and floor show.

The convention arrangements are under the direction of Edward F. Barrett, president, Long Island Lighting Company.

Hotel reservations should be made direct with the Westchester Country Club.

Pacific Coast Gas Association

THE Nominating Committee of the Pacific Coast Gas Association has recommended the election of the following officers at the coming annual convention of the Association to be held September 18-20 at Coronado, California.

President—Robert A. Hornby, vice-president, Pacific Lighting Corp.; vice-president—W. G. Vincent, vice-president, Pacific Gas and Electric Co.; treasurer—D. G.

Martin, general auditor, Pacific Gas and Electric Co.

Those nominated for directorships were: R. G. Barnett, vice-president and general manager, Portland Gas and Coke Co.; H. W. Edmund, sales manager, Coast Counties Gas and Electric Co.; W. C. Mainwaring, sales manager, British Columbia Electric Railway Co., Ltd.; and W. R. Smith, vice-president, Continental Water Heater Company.

Present directors who still have a year to serve are: F. M. Banks, Southern California Gas Co.; R. S. Fuller, Pacific Gas and Electric Co.; M. A. Pooler, Tucson Gas, Electric Light & Power Co.; and C. H. Potter, Southern Counties Gas Co. A. E. Holloway, of San Diego, the retiring president, will automatically become a member of the 1941 board.

Canadian Gas Association

J. B. McNARY, manager and secretary of the Canadian Meter Co. Ltd., Hamilton, Ontario, was elected president of the Canadian Gas Association at the annual convention of the Association at Jasper Park Lodge, Alberta, in July. Mr. McNary is the first manufacturer to enjoy the distinction of being elected president of the national gas association.

Other officers elected at the convention include: first vice-president—W. J. Peadar, Jr., Montreal Light, Heat & Power Cons., Montreal, Que.; second vice-president—Frank J. Howell, Dominion Natural Gas Co., Ltd., Brantford, Ont.; and secretary-treasurer—George W. Allen, of Toronto, Ont.

Michigan Gas Association

AT the annual convention of the Michigan Gas Association held July 10, Fred P. Cope, division manager, Consumers Power Co., Saginaw, was elected president and Henry Fink, assistant general manager, Michigan Consolidated Gas Co., Detroit, was elected vice-president. A. G. Schroeder was re-elected as secretary-treasurer.

CONVENTION CALENDAR

SEPTEMBER		
Sept. 6-7	Maryland Utilities Association	
	Ocean City, Md.	
9-13	American Chemical Society	
	Detroit, Mich.	
16-17	Wisconsin Utilities Association, Accounting Section	
	Lawsonia Hotel, Green Lake, Wis.	
18-20	Pacific Coast Gas Association	
	Hotel del Coronado, Coronado, Calif.	
23-26	American Transit Association	
	The Greenbrier Hotel, White Sulphur Springs, W. Va.	
25-27	American Trade Association Executives	
	Chicago, Ill.	
26	New England Gas Association, Accounting Division	
	Hartford, Conn.	
26-27	Empire State Gas & Electric Association	
	Westchester Country Club, Rye, N. Y.	
OCTOBER		
Oct. 4-5	Public Utilities Association of West Virginia	
	White Sulphur Springs, W. Va.	
Oct. 7-10	American Gas Association Annual Convention	
	Atlantic City, N. J.	
7-11	National Safety Congress	
	Stevens Hotel, Chicago, Ill.	
16-18	Independent Petroleum Association of America	
	Dallas, Texas	
20-24	American Dietetic Association	
	Hotel Pennsylvania, New York, N. Y.	
21-25	National Metal Congress and Exposition, including A.G.A. Combined Industrial Gas Exhibit	
	Cleveland, Ohio	
23	New England Gas Association, Operating Division	
	Hartford, Conn.	
NOVEMBER		
11-13	Mid-West Gas School and Conference	
	Iowa State College, Ames, Iowa.	
DECEMBER		
10-12	National Association of Railroad and Utilities Commissioners	
	Miami, Fla.	



Accounting SECTION

F. B. FLAHERTY, Chairman
E. N. KELLER, Vice-Chairman

"Four Payment Plan" and Weather Chart Aid New Orleans Collection Record

THE coldest January of which there is any authentic record was experienced by New Orleans this year. The following extract from an editorial appearing in a local newspaper describes quite vividly the reactions of many of our citizens to this unprecedented weather.

Some Weather!

"Our favored city and region are passing through seven or eight days of cold weather the like of which they have not known for 69 years. Our drafty houses are hard to heat against such temperatures; our unprotected water pipes burst; our ordinary wraps leave us shivering. Most of us never experienced such weather, and few or none of those who have are prepared for it. Inconvenience and discomfort are widespread. Thousands have been in actual distress.

"Those who have never known 19 degrees above Mr. Fahrenheit's zero think of it as a shocking visitation, not long to be endured without action against the weather man. Old Orleanians who grew up in the North have outgrown their tolerance for cold in the easier winter conditions of the Gulf Coast.

"Two factors determine the discomforts of winter—one is the temperature of the air, the other is the moisture in it. Cold, damp air is about as disagreeable as dry air that is 25 degrees colder. Nature has arranged it this way in order to make life more tolerable for all of us. The colder that the air becomes, the less water it can hold and the drier it becomes. Hence, it often happens that a visiting friend from Montreal or Winnipeg feels just as uncom-

By JOHN E. HEVRON

*Asst Credit Manager, New Orleans
Public Service Inc.*

fortable at 35 to 50 degrees down here, depending on humidity, as he would at home in a sub-zero atmosphere.

"We all prefer the conditions to which we are accustomed, and it is not too much to hope, on the record, that it will be another half century before we have any more 19 degree weeks."

From the above article one can see that New Orleans passed through a cold weather crisis the like of which had not been experienced in a great many years. Many of her people were faced with a financial emergency which they had not anticipated or planned for—plumber bills, increased gas, water and coal bills, doctor bills, bills and more bills. Could something be done to alleviate such a situation? On January 31, 1940, at the Mayor's request, the municipal water agency announced that excessive water bills occasioned by broken water pipes or the purposeful running of water to prevent freezing, would be adjusted on the basis of the previous year's bills for the same period.

Several days later, after conferring with the President of New Orleans Public Service Inc., the Mayor announced through the press that the company would permit its customers to pay their gas bills in four equal installments without loss of discount. As the weather had not caused any appreciable increase in the electric bills (electric

service is also furnished by New Orleans Public Service Inc.) the plan called for the full payment of the electric bill and one-quarter of the current gas bill within the discount period. It further provided that one-third of the remainder should be added to and become a part of each of the three succeeding regular monthly bills.

As a matter of fact the company had for several years followed a policy of helping its customers by allowing them to pay their bills in installments, but this was the first time there had been any newspaper publicity. However, this year as before, far more liberal terms than the so-called "four payment plan" were granted to those customers who through inability to pay required more extended periods. Rather than make the customers conform to one or two arbitrary payment plans the company prefers to virtually let the customer "write his own ticket." The wisdom of this policy has been borne out by expressions of appreciation and gratitude and the satisfactory collection record.

It was anticipated that the publicity given by the newspapers to the extended payment plan would result in our being literally swamped with customers desiring this accommodation and also that we would be faced with a record demand for gas meter tests and high bill investigations. However, during February and March only some 8,300 customers requested extended payment privileges and the total of their deferred installments amounted to approximately \$85,000.

Believing that many customers might

(Continued on page 328)



Mammoth chart that explained high utility bills to customers during the record-breaking cold wave



Commercial SECTION

DAVIS M. DEBARD, Chairman
R. J. RUTHERFORD, Vice-Chairman
J. W. WEST, Jr., Secretary

What Are the Trends in Appliance Servicing?

By F. M. FOSTER

*Southern California Gas Company,
Los Angeles, Calif.*

ONE of the most notable changes which has taken place in practically all lines of merchandising, during recent years, is in the quantity and quality of service. The trend has been to offer an increasing amount of service to purchasers of goods. It has been brought about through the endeavor of those engaged in the sale of commodities to develop more effective buying appeals. Competition for the customer's dollar has been largely responsible for installment selling, free trial offers, extended guarantee periods, and many other services too numerous to mention. The result is customers of today take service for granted and are demanding more service for their purchase dollar.

Utilities have, to some extent, helped to bring about this situation. We have encouraged customers to look to us for service, for actually service is the commodity we sell. Accordingly, we should expect to render a greater amount and a higher quality of service than merchants engaged only in the sale of goods. I believe, therefore, we should look upon a portion of our appliance servicing as a valuable aid to the development and growth of our business; as a furtherance of a policy to create good will, satisfied customers and increased gas usage.

Effect of Competition

To be realistic, competition has, in some cases, been responsible for accelerating the increasing service trend. Modern gas appliances have kept abreast of competitive developments by incorporating many automatic and time saving features. Sales programs have been developed to market these new appliances and advertising has stressed the modernity, beauty, convenience, and service rendered, making it imperative for utilities to modernize their appliance servicing policies.

Naturally the service rendered by a utility will depend, to a large extent, on the amount of service its customers have been educated to expect and on the competition it encounters, being governed in the final analysis by a company's economic circumstances. In the territory served by the Southern California Gas Company, we have met with intense competition. The majority of approximately three quarters of a million customers served are located in or ad-

jacent to the City of Los Angeles, where we compete with the largest municipally owned electric system in the country. This competitor has an aggressive sales organization, effective advertising, and a liberal free wiring subsidy plan for electric range and water heater installations.

To prevent serious inroads into our business we have markedly increased our sales program. We have been active in the promotion of the modern automatic gas appliance and this has resulted in a high degree of public acceptance of clock controlled and CP ranges.

Home Service Work

Our Home Service Department has been expanded and trained to take on added responsibilities. Dealer and company salesmen are encouraged to make use of our Home Service Department for customer satisfaction is of utmost importance and many service calls can be traced to improper use of the appliance.

Of particular interest to us is the manner in which Home Service has successfully supplemented regular servicing procedures in special or complaint cases. The Home Service representative is able to interpret customer problems in terms of both appliance performance and cookery methods and has, in some cases, been able to satisfy completely a customer's complaint after the serviceman has unsuccessfully exhausted all possibilities normally available to him.

Our employee prospect program encourages employees to be on the alert for old and outmoded appliances and to take advantage of all sales opportunities. This program seems to have the particular advantage of capitalizing on opportunism to the utmost. The service employee can interpret the inadequacies of an old appliance in a sales way, but with all the advantages of non sales counsel. That the program has been effective in encouraging our servicemen to be more sales conscious is shown by the fact that in excess of 30 percent of the leads turned in are received from this group and approximately 27 percent of these result in sales.

Our appliance servicing program has been developed to keep pace with our increased sales activity. Our present service

policy is to render free adjustment service to gas appliances and in many instances to controls and is a marked change from the simple adjustment service of a decade ago. Modern gas appliances with automatic controls have brought about increased requirements for service, for the many advantages they offer the customer will be realized only if they are properly installed and adjusted. Modern appliances have also necessitated a marked improvement in the quality of service and a thorough knowledge on the part of the serviceman is required to make precision adjustments.

Recognizing the trend we have evolved a number of programs to develop our policy of high quality service and to reduce servicing cost. The most important of these, and I believe of more general interest, are Supervisory Training, Employee Training, the Testing Laboratory and Dealer Training which I will cover briefly in the following discussion:

Supervisory Training

Our service practice was reviewed to determine if actual service was conforming to standard service policies. A cursory survey showed that 40% of our customers were receiving 90% of the service rendered. A number of these recurring service requests were attributed to certain non uniformities in the application of our standard service policies and to either misunderstanding or lack of information on the part of our servicemen. This necessitated a review of our training practice and procedure.

During the latter part of the year 1938 our Customers' Service Department inaugurated a training program for its supervisors and introduced a plan designed to standardize the supervision of operating practices and insure a higher quality of service to the customer. The plan provides for periodic field inspection of the serviceman's work by an immediate supervisor, followed by a discussion with the serviceman regarding the inspected work and his work in general. The serviceman is told if his work is satisfactory; if not satisfactory he is given constructive criticism or additional training, whichever may be necessary.

To aid the supervisor a serviceman's work is divided into three easily measured components; the man himself, his knowledge of order procedure and his knowledge of mechanical field work. The Customers Service Department has found that an inspection of each of these components is a

Presented at Natural Gas Section Convention, Houston, Texas, May 6-10, 1940.

practical and fair method of judging a man's qualifications.

Another objective of the program is to train supervisors in other important supervisory functions such as the reasons for company policies, the importance of following established service routines, the importance of service as related to sales, how to increase the serviceman's interest in our cash award plan for prospect leads, and how to encourage job interest through solicitation of the serviceman's suggestions or criticisms pertaining to any phase of the business.

Improved employee relations created by a better understanding between the foreman and his men has improved job interest and markedly increased the number of helpful suggestions received from our servicemen regarding appliance operation. These suggestions have enabled our Testing Laboratory to provide manufacturers with information which may be helpful in making future constructive changes. In addition they have been of material assistance to our employee training staff.

Employee Training—Customer Service Department

Employee training has been carried on by our company for a number of years. With the development of more efficient supervision it has been easier to ascertain individual weaknesses and provide training tailored to correct them. Training of employees is now a major activity under a full time supervisor and eight assistants.

Classrooms have been equipped with facilities necessary to thoroughly familiarize employees with the gas business and their individual job requirements. All servicemen attend classes one hour every two weeks, oftener if occasion demands, at which time latest developments are discussed, field problems are presented and seasonal appliance courses are given.

Personnel selection routines as developed in cooperation with the Personnel and Operating Departments have been effective in obtaining the talent necessary for successful completion of a training course for prospective servicemen. New men are given intensive training which includes field and classroom work for approximately two and one half months.

Testing Laboratory

Our local Testing Laboratory established approximately three years ago in collaboration with the Southern Counties Gas Company has been of immeasurable help from both a service and sales standpoint. The laboratory examines certain new appliances to determine effectiveness of controls, accessibility from the adjustment viewpoint, and general operating characteristics. Then, through our job training department, our servicemen are informed of unusual difficulties they may encounter and the most simple way to overcome them. Conversely, problems developed in the field by our servicemen are analyzed in the laboratory

and the solutions given to our training department.

Dealer Training

There are today more than 1150 active cooperative dealers in our territory. A few years ago we had only a fraction of this number. These dealers have done a commendable selling job but many have not followed through to see that appliances are properly installed and adjusted. The small dealer, selling three or four ranges a month, can hardly be expected to have servicemen trained to install and adjust the modern gas appliance. But even the larger dealers have been negligent in this respect, several merely uncrating appliances and installing them in the home with little if any adjustment. The result has been a number of unnecessary calls for our service department and in some cases irate customers.

In the City of Los Angeles our municipal competitor takes steps to see that all electric ranges are properly installed and that each customer receives proper instructions in its operation. Electric dealers do not install ranges. They deliver them to the local utility warehouse where they are checked for defects, delivered and installed by the utility's own specialists.

Our dealers sell in excess of 95% of all appliances installed on our lines but until recently we had done little to assist in the training of dealer servicemen. Prior to the 1938 and the 1939 CP Range campaigns we required all dealers desiring to participate to send their servicemen and installers to training classes. These classes were well worth our efforts and for the 1939 series Service Guide Manuals were given to each man attending. The material in the manual, covering installation and servicing of modern appliances and instructions to be given customers, was thoroughly explained.

Recently a member of our Customers Service Department training staff was assigned to devote full time to the training and instruction of dealer servicemen and installers. This man, accompanied by a dealer contact man from the Sales Department, has contacted, since November, 1939, more than 400 dealers at their place of business.

Supplementing personal contact, we now offer all dealers the latest editions of the A. G. A. range and water heater manuals at cost, and mimeographed sheets of current developments are included.

Dealers, in increasing number, are asking for instruction and advice. Our more successful dealers, attracted by the benefits obtained in classes previously held, are sending their men to us for further training. One of the large mail order houses, selling about 1,000 ranges a month, has recently set up a test rack for the purpose of adjusting each appliance before it leaves the warehouse and so advises purchasers by posting on the appliance the following:

"TESTED

This appliance has been given factory recommended tests in the Los Angeles

Shop, using natural gas served in this locality, before delivery. No further adjustment should be necessary."

For the servicemen and installers of this large firm we are holding a series of meetings in our own classrooms, instructing them on proper installation and servicing of modern gas equipment. Occasionally cooking demonstrations are also given.

The Customers Service Department reports that effective dealer training has resulted in reduced operating expenses. In the years 1937 and 1938 in excess of 50% of dealer installations required call-backs. In the years 1939 and 1940 improved conditions have permitted spot check of installations of not more than 10% of the appliances installed and these are usually concentrated on non-cooperating dealer installations.

The manufacturing trend to more refinements in appliances has brought about a corresponding trend in modernization of servicing methods to insure better installation and adjustment of appliances. Our attempt to attain a higher quality of service has encouraged closer integration of Sales and Service through our Home Service Department, Employee Training, Dealer Training, and Employee Prospect program. We have found a trend of open mindedness to these changes, not only within our own company but also on the part of manufacturers and dealers, and we are now dealing with our public with better understanding. We have faith in the thesis that the better we understand our customers' desires and the more exacting their demands upon us may be, the more firmly our business will become a necessity for the home maker of today and tomorrow.

Home Service Director Is Drowned

SADIE KILGOUR, 25-year-old home service director of The Consumers Gas Company of Toronto, Ontario, died tragically on July 24. Miss Kilgour was drowned in the Blanche River when a motorboat in which she was riding with four other persons exploded while being refueled.

Miss Kilgour had been employed seven years with The Consumers' Gas Company. She was assistant dietician before being promoted to director of the home service division a year ago. She spent a large part of her time teaching housewives how to use gas appliances and was widely known in the community for her lecturing at schools and at lodge meetings.

Actively interested in the Canadian Dieticians' Society, last winter she conducted a Saturday morning cooking school for Girl Guides.

Miss Kilgour had displayed an active interest in the work of the Home Service Committee of the American Gas Association.

Companies and Salesmen Win Awards in Refrigerator Campaign

ANNOUNCEMENT of awards in the "Pioneers of Progress" campaign in the April, May and June quarter in the current nation-wide A. G. A. Refrigeration Committee sales drive has been made by Bernard T. Franck, chairman of the Committee and vice-president of the Milwaukee (Wis.) Gas Light Co.

Twenty-four gas companies have received a handsome exact scale model of a Pan American clipper ship for their exceptional sales work in leading their respective classifications for the three-month period.

Bermuda Winners Cited

Leading their respective divisions, six salesmen by aggressive and continuous sales work topped several thousand entered in the competition to emerge victorious and receive an all expense trip to Bermuda on a Pan American clipper ship.

The high salesmen in each of the 24 winning gas companies are each being awarded cash prizes for their pace setting sales work during the second quarter. There are 49 salesmen who are to receive checks. In addition to this the Home Service departments of winning gas companies will be each given a \$25 cash award.

The remaining period of the campaign will decide who will win the hotly contested "Annual Best Performance Awards." In October the 24 companies winning this award will each select a representative to make the Bermuda flight. The thirty sales pilots will board the clipper after the annual convention of the A. G. A. closes.

The six salesmen who have won flights to Bermuda are:

- Division 1—Marianne Billies, The Brooklyn Union Gas Company, Brooklyn, New York.
- Division 2—Ernest Audino, Providence Gas Company, Providence, Rhode Island.
- Division 3—Albert Timmer, Muskegon Gas Company, Muskegon, Michigan.
- Division 4—E. Hackathorn, The East Ohio Gas Company, Akron, Ohio.
- Division 5—W. B. Gilmer, Alabama Gas Company, Montgomery, Alabama.
- Division 6—R. W. Smith, Georgia Public Utilities Co., Griffin, Georgia.

The winning companies are:

Greatest Number of Installations Per 10,000 Meters

- Division 1—Southern Counties Gas Company, Los Angeles, California.
- Division 2—Providence Gas Company, Providence, Rhode Island.
- Division 3—Metropolitan Edison Company, Easton, Pennsylvania.
- Division 4—Mobile Gas Service Corp., Mobile, Alabama.
- Division 5—Macon Gas Company, Macon, Georgia.

Greatest Total Installations Reported

- Division 1—Brooklyn Union Gas Company, Brooklyn, New York.
- Division 2—Milwaukee Gas Light Company, Milwaukee, Wisconsin.
- Division 3—Metropolitan Edison Company, Easton, Pennsylvania.
- Division 4—Ohio Fuel Gas Company, Columbus, Ohio.
- Division 5—Macon Gas Company, Macon, Georgia.
- Division 6—Virginia Gas Distribution Corp., Staunton, Virginia.

Greatest Percent of Increase in Installations Over the Reported 1939 Installations

- Division 1—Southern Counties Gas Company, Los Angeles, California.
- Division 2—Public Service Electric & Gas Co., Trenton, New Jersey.
- Division 3—Florida Power & Light Company, Miami, Florida.
- Division 4—Equitable Gas Company, Pittsburgh, Pennsylvania.

Division 5—Alabama Gas Company, Montgomery, Alabama.

Division 6—Citizens Gas Fuel Company, Adrian, Michigan.

Greatest Percent of Replacement Installations of Outmoded Automatic Refrigerators of Total Installations for Period

- Division 1—Peoples Gas Light & Coke Company, Chicago, Illinois.
- Division 2—Consumers Gas Company, Reading, Pennsylvania.
- Division 3—Roanoke Gas Company, Roanoke, Virginia.
- Division 4—Ohio Fuel Gas Company, Springfield, Ohio.
- Division 5—Ohio Fuel Gas Company (Parma Group), Elyria, Ohio.

Greatest Number of Individual Retail Installations Sold at the Prevailing Retail Prices and Under the Policies of Each Company

- Division 1—Southern California Gas Company, Los Angeles, California.

Greatest Number of Installations Per 1,000 Meters

- Division 6—Georgia Public Utilities, Aiken, South Carolina.

Home Service on the Pacific Coast

MRS. MARGUERITE SCROGGIE, home service director, Southern Counties Gas Co., Santa Monica, and chairman of the Pacific Coast home service program, announces some interesting discussions to be a part of the annual convention of the Pacific Coast Gas Association which takes place Sept. 18-20 in Coronado, Calif.

In one General Session program there will be a skit entitled "A Lyrical Gasconade" presented by Mrs. Scroggie, Mrs. Francis Brewer and Joy McCambridge of the Southern Counties Gas Co. This is to be a new and unusual CP range presentation. At a general luncheon program, Gladys Price, of the Southern California Gas Co. has the assignment "Let's Get Together," using this title to discuss the results and application of the A. G. A. Home Service Committee Report this year on the subject of standard range tests.

In an afternoon sales session of the convention, home service brings six short talks to the program:

"Without Home Service,—What?"—Marguerite Fenner, Pacific Gas & Electric Co., Sacramento, Calif.

"Insuring the Future"—Mrs. Jessie Ewing, Southern California Gas Co., Compton, Calif.

"Deal in the Dealer"—Mrs. Winifred Davison, Coast Counties Gas Company, Santa Cruz, Calif.

"Via Consumer Groups"—Grace Myers, Southern California Gas Company, Los Angeles, Calif.

"Do We Know?"—Mildred Kier, San Diego Consolidated Gas and Electric Company, San Diego, Calif.

"One-Ring Circus"—I. C. McGee, Seattle Gas Company, Seattle, Wash.



Cover of new portfolio describing the Fall-Winter sales promotion campaign in behalf of CP gas ranges which was distributed to gas companies in August. A revised edition for dealer outlets will be distributed by September 1. Under the theme "The American Homemaker Speaks," the new campaign ties in with the national advertising theme



Cold-Set Printing Process Blazes Trail with Gas-Burning System

By HARRY W. SMITH, JR.

American Gas Association

PRINTING with "cold-set" ink—ink delivered as a solid but handled hot and molten right up to the instant it is transferred from the type to "freeze" on the paper—is so new that its debut into the high society of graphic arts processes dates from a report* presented before the Technical Association of the Pulp and Paper Industry as recently as February 21. Nevertheless, its attributes are so many that already a daily New York newspaper, as well as a first-rate magazine printing firm, are using it—and finding it worthy of every claim. The newspaper is none other than the amazing new pioneer in metropolitan journalism, *PM*. The magazine firm is the Art Color Printing Company at Dunellen. It is safe to say that several other printing establishments in only-Heaven-knows-what classifications will be doing "cold-set" printing before the process can earn one candle on a birthday cake.

A Word About Cold-Set Printing

In barest outline, solid ink is melted at 200° F. or above and maintained at this temperature through all ink conduits, fountains or ink pumps, and ink rails. The ink cylinder is heated to keep the ink sufficiently fluid to distribute readily and pass over the intermediate rolls onto the plate cylinder as a liquid. The plate cylinder is also heated so that the plates are kept hot by contact and the ink maintained at 200° F. or better up to the very instant it touches the relatively colder paper and "freezes" thereon with virtually no penetration. It is claimed that the ink is actually "plucked" off the plate by "kiss" contact, much as wood might be coated by merely touching it to molten paraffin.

The fact that the ink freezes solid instantaneously on the paper without penetration and without the necessity of subsequently drying by either absorption, evaporation, oxidation or polymerization, accounts for: (1) the opacity, (2) the sharpness of characters and halftone dots, (3) the elimination of strike-through on even the thinnest of stocks, (4) the insurance against first-impression offset, and (5) the high web speeds permissible without long leads after

plate contact and without interposed accelerated-drying-by-heat systems which may strain or distort the paper. The ink is heated only *before* it touches the paper, not *after* it is on the paper as in heat set methods. The fact that the ink is a solid at normal room temperatures and is not chemically changed in any way by alternate meltings and freezings accounts for: (6) the free-

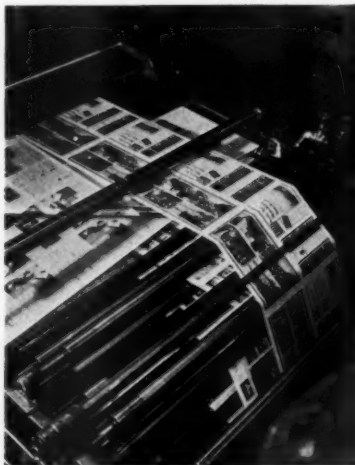


Figure 1. The very first commercial run with "Velo" cold-set ink on newsprint—as it produced the preview copy (June 17) of *PM*, New York's new, 2-color, afternoon daily tabloid

dom from smudging, and (7) the elimination of the necessity of washing-up rails, cylinders or plates (except for color changes) between printing periods.

Obviously, the chief job in adapting any press to cold-set printing involves the installation of means of: melting the ink; keeping it sufficiently molten to flow easily through all conduits, fountains, pumps, rails, etc.; and heating the ink cylinders and plate cylinders. At the Brooklyn Daily Eagle where *PM* is printed on two modified 4-unit Superproduction Hoe Presses, a gas-fired water heater of somewhat special design delivers 800 gallons per minute of

hot water at 228° F. and 10 lbs. per square inch pressure to the heating jackets of: the various ink pumps, each ink rail, and each ink cylinder. Another gas-fired water heater of identical design delivers a similar quantity of water at 250° F. and 16 lbs. per sq.in. pressure to the heating jackets of all the ink-melting-tanks and ink lines running therefrom to the press, as well as to the various plate cylinders—the higher temperature water being required at these locations in the interest of speed in ink melting and (in the case of the plate cylinder) in view of the fact that the surface of this cylinder does not heat the ink directly, but merely heats the ribbed stereotype plates which in turn must be hot enough to keep the ink transferred to them at the proper temperature and fluidity.

Down to Cases About the Water Heating System

Because of the unusual requirements of this pressure water heating system, three specially designed 25 hp. boilers were adapted. One is shown in Figure 2. Each of the three is fired by nine bar-burners capable of burning a total of 2400 cu.ft. of 540 B.t.u. gas per hour when full-on—and is insulated with magnesia block cov-

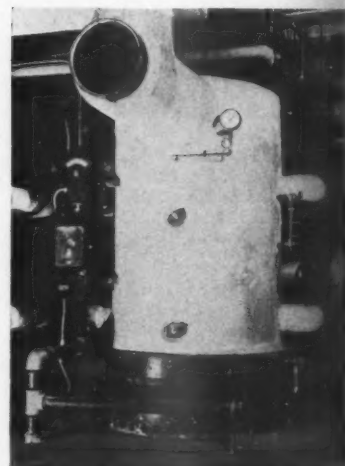


Figure 2. One of the 3 special 25-h.p. gas-fired boilers adapted to closed-system water heating well above 212° F., in order to melt (and keep molten up to the point of contact with paper) the revolutionary solid ink

*"The 'Velo' Cold Set Process of Printing and Its Relationship to the Paper," Frank G. Breyer, Singmaster & Breyer, 420 Lexington Avenue, New York, N. Y.

ered with finish mix. The vertical fire-tubes are so arranged (in special pattern) that the mercury bulb elements of the temperature controls can penetrate to the center of each unit; and (in view of the tremendous rate of water circulation through each unit) double inlet and outlet connections are provided so that the water will not "short-circuit" and cause inadequate circulation around fire-tubes (as might occur with a conventional single lower inlet and single upper outlet). Y-branches provide two diametrically opposite connections for both the inlet water (bottom) and the outlet water (top). Motor driven pumps accomplish the necessary rate of circulation.

The three units are all interconnected so that any two may supply either of the two separate hot-water-circulating systems serving the pressroom—both systems being closed, of course. As now operating, each system circulates 800 gallons per minute and is handled by only one unit—the center unit being a spare ready to throw into either system at a moment's notice. At the top of each closed system, high under the roof, is a heavily insulated air-cushion expansion tank (right, rear, Figure 3) to compensate for any pressure variations in the system. This also allows for accumulation and escape of air from make-up water.

The control system represents the very latest in both precision and safety for water heating installations operated at temperatures above 212° F.—and, to the best knowledge of the writer, is the first of its kind. It provides push-button ignition by a safety flame pilot—10,000 volts to ignite the pilot, after which the potential drops to 2,300 volts and the circuit continues to arc only if the pilot is on, this flow of current actuating a double-relay system to open the main gas valve. The relays, in turn, are connected to an on-and-off temperature-

indicator and limit-control with maximum and minimum stops. This is a safety feature, not the main temperature control, although it could be so used in an emergency. As an additional safety factor there is a raw gas pilot system entirely independent from the electric pilot system.

The main control is *modulating*—and entirely separate from the ignition system. Thus gas is used only in proportion to the heat required in the pressroom, no fuel for standby or maintenance being wasted, and temperature control is amazingly constant (see actual temperature chart, Figure 4).

Still another safety feature is a dump valve at the low point of each circulating water system, actuated by a break-glass switch in the pressroom and interconnected to a main gas shut-off valve. Further, should a pump fail, a relay would both set off an alarm in the head pressman's office and close the main gas line. Relief valves, gauges, etc., as required by safety codes are, of course, provided.



Figure 4. An actual temperature-recorder chart showing the absolute constancy of water temperature regulation (less than 1° F. variation in 12 hours) achieved by the gas-fired pressure-water-heating system irrespective of units connected or interruptions of run. The control system involves the latest in safety, control and convenience devices for hot water boiler operation, and a "first-of-its-kind" hookup

Most important of all, however, are the two closed hot water systems beyond the boilers and supplying heat (in the form of hot water) where it is needed in cold-set printing. The 250° F. system is the most circuitous. It serves the jacket of the 1/4-inch welded-steel ink-melting tank (foreground, Figure 3) which is at least ten feet above the topmost point of the presses and is 28" deep by 49" long by 24" wide. This tank has a pitched bottom and a central baffle. Both the baffle, the bottom and all sides are jacketed with the hot water under 16 lbs. pressure, and insulated heavily with magnesia. Also served are three

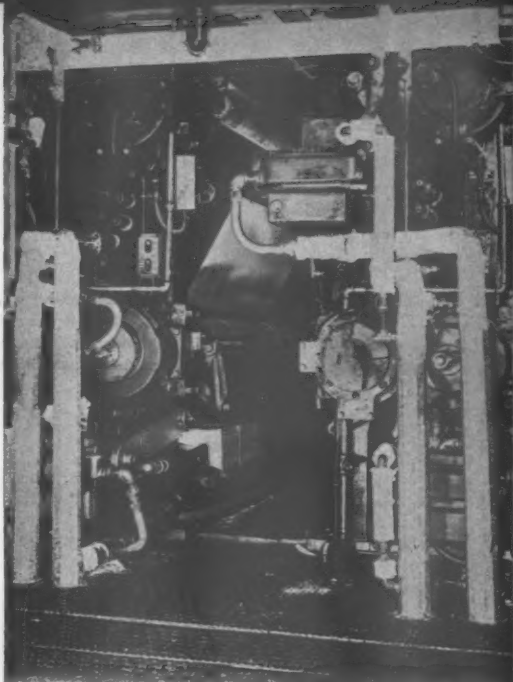


Figure 5. End-view of one unit of one press showing insulated hot water lines coming up through floor to supply jackets of ink-pump and ink-rail, and to heat ink and plate cylinders internally. Top horizontal header is jacketed molten-ink line (even drop lines and valves connected thereto being jacketed). Water for heating ink-tanks, ink-lines, and plate-cylinders is at 250° F. (16 lbs. per sq.in.); water for pumps, rails, and ink-cylinders is at 228° F. (10 lbs. per sq.in.)

smaller ink-melting tanks for colors other than black.

This same 250° F. system serves the jackets for all the ink lines (1/2" or 3/4" brass-pipe lines completely and centrally encased in welded 2" water line, even to the extent of drop lines, valves, et al.). No leakage or possibility thereof is permissible in view of the temperature and pressure of the water, and it is advised that as much of the ink-line jacketing as possible, be pre-welded. Figure 5 shows one unit of one press—the top horizontal white line being the main ink supply header—and jacketed ink drop lines and valves being visible and connected to it at three points.

The 250° F. system further supplies the plate cylinders (see left, center, Figure 5) through axial connections. In any case no more than 4° F. of water temperature is lost across the press. There is a supply and return header on either side of each press so that counter-flow on alternate cylinders can be attained. All hot water lines are, of course, heavily insulated with 2 1/2" thick asbestos contained in sewed fabric.

As for the lower-temperature hot water system which maintains ink fluidity at all ink pumps, rails, and ink cylinders, Figure 5, shows (at the right) one of the hot water lines coming up through the floor to supply 228° F. hot water to the pump jacket (box which is just above center in Figure 5), the ink rail (just behind the

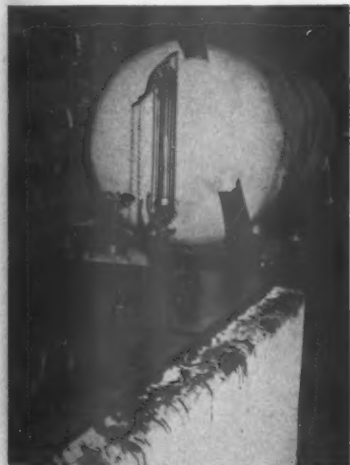


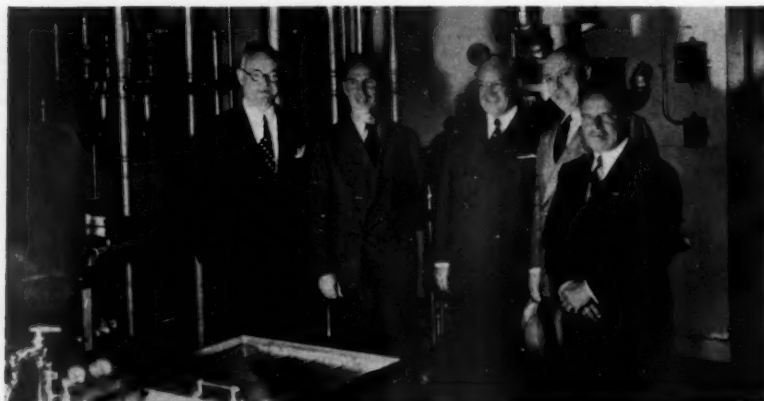
Figure 3. A hot-water jacketed ink-melting tank (foreground) feeds molten ink by gravity through hot-water-jacketed lines to the press. In the background is one of the air-cushion expansion tanks for regulating hot water system pressures

pump), and the main ink cylinder (just above the pump). The rail is specially designed as a hot water vessel lying along and almost in contact with the ink cylinder over a considerable arc, and fitted with 32 end-to-end ink slots fed with ink under 1 lb. pressure through wedge-shaped reservoirs. Here again, all hot water connections to various elements of the press are in parallel, and the direction of flow across the press alternates.

To date the installation has been entirely satisfactory and surprisingly economical. Although it is estimated that the three boil-

ers will use about 10,000,000 cubic feet of gas annually, careful cost accounting, and estimates based upon actual tests with a smaller system preceding and pioneering for the main installation, show that total fuel costs will not exceed \$1.04 per press hour. This amount distributed over the 32,000 papers which are printed per press hour is quite small as compared to other production costs. Almost no maintenance will be required in view of the completeness of automatic control, the safety features provided, and the cleanliness and space conservation of gas-burning systems.

Fair Exhibit Features Gas Water Heating for Sanitization



Inspecting the new 180° F.-water-for-dish-sterilization Exhibit just opened in the Motor Equipment Museum, New York World's Fair. (Left to right): JOHN G. GRIMLEY, Special Deputy Commissioner (World's Fair), New York City Dept. of Health; JOHN L. RICE, Commissioner of Health, New York City; HARVEY D. GIBSON, Chairman of the Board, The World's Fair of 1940; EUGENE D. MILENER, Secretary, Industrial Section, American Gas Association; GEORGE U. HARVEY, President, Borough of Queens, New York City

SO successful has been public health and sanitation experience at the New York World's Fair, and so instructive, that the World's Fair Division of the Department of Health of the City of New York has just set up a new exhibit in the Motor Equipment Museum at the Fair to demonstrate: (1) the proper cleansing of eating and drinking utensils in accordance with the model sanitary code applied to all World's Fair purveyors, and (2) the protection of water supplies against pollution as the result of back-siphonage.

John L. Rice, Commissioner of Health of New York City, expects public officials from all over the country to use the new exhibit as a guide in shaping future public health and sanitation enforcement in their communities. In view of the significant part played by the gas industry in the establishment of the high water heating standards at the Fair, and in designing the model systems used to supply adequate 180-degree water under severe operating conditions,

this development is of particular interest to the gas industry. The Volume Water Heating Committee of the American Gas Association has consistently stressed the need for the use of adequate water at a full 180° F. for sanitization, as well as the commanding role of gas fuel in reaching this standard.

Official opening of the exhibit was on August 8, following a special luncheon at the National Advisory Committees Building given by Harvey D. Gibson, chairman of the Board of the 1940 World's Fair, for those who helped maintain the Fair's high record for public health protection. In recognition of their efforts, representatives of the Volume Water Heating Committee of the Industrial Gas Section, as well as A. G. A. staff members and representatives of gas utilities and equipment manufacturers, were asked to take part in the opening ceremonies.

The dishwashing section of the exhibit includes three dishwashing machines and

three glass-washing units of the most recent design—all working, and all supplied with hot water at 180° F. from two typical up-to-the-minute gas-fired hot-water-for-sterilization installations. Both water heating systems are of the advanced type recently analyzed, tested, and recommended by the Volume Water Heating Committee of the American Gas Association.

One of the systems consists of a large storage tank for 140° F. water and a small booster tank for 180° F. water (to perform the sterilization function), all heated by steam coils supplied from a gas-fired boiler. The other consists of the new booster-recovery type of gas water heater which supplies water for both the dishwashing (140° F.) and the sterilizing (180° F.) functions from a single appliance. Complete automatic and thermostatic control features each system.

The dishwashers (about 10,000 pieces per hour each) and the glasswashers (about 2,000 glasses per hour each) are all of the type redesigned by their manufacturers and designated as "World's Fair Models" in order to comply with the stringent but indicative-of-the-future Special World's Fair Sanitary Code.

Howell Returns to Utility Post

L. O. HOWELL, former Southern California Gas Company industrial gas sales engineer, who has been in the research department of the American Gas Association Testing Laboratories at Cleveland, Ohio, for the past three years, returned to his former position with Southern California Gas in Los Angeles, on July 1. While in Cleveland, Howell completed research problems in connection with reducing atmospheres.

Edgar L. Shultz Dies

EDGAR L. SHULTZ, formerly manager of Ridgewood Office of The Brooklyn Union Gas Co., died August 14 at his residence in Brooklyn, N. Y.

Mr. Shultz was 81 years of age, having been born on June 8, 1859. He entered the employ of the Citizens Gas Light Company on April 1, 1889, and on February 1, 1901, was appointed chief clerk of Metropolitan branch. September 22, 1913, he was made manager of Metropolitan sub-branch No. 1, and on May 1, 1916, he took charge of Williamsburgh sub-branch, which later became known as Ridgewood Office. He was holding this position at the time of his retirement on pension, December 1, 1936.

Mr. Shultz completed 50 years of service on March 31 of last year. At the Service Emblem dinner held in November he was one of seven employees of Brooklyn Union who received emblems denoting the completion of a half century of service.

Going Ahead WITH INDUSTRIAL GAS

Tom Gallagher (Chicago), believe it or not, has kitchen equipment houses and dealers selling gas water heating for him along with the usual bill-of-goods for commercial cooking. Claims Tom, "It's coming! Apparatus for effectively developing 180° F hot water will soon be just as essential in the kitchen as the range, fat fryer, or coffee urn."

Speaking of volume water heating, we have a brand new piece of equipment which should interest apartment house, school, swimming-pool, restaurant and other commercial customers—Speedstream Manufacturing Company's goliath among gas-fired instantaneous types, using 950,000 B.t.u. per hour, capable of heating (60° rise) 25 gallons per minute, and boasting anti-liming steel coils which will stay clear even with salt water. It's the biggest instantaneous unit yet (by about 3 times) to win A. G. A. approval.

Just because you don't have gas service into a plant in your territory, don't let that stop you from calling periodically to let that plant know what it's missing—and to make new industrial friends. Rodney Sanford (Brooklyn Union) has been calling for five years on a floor-scraper manufacturer whose plant has been gas-less—and, BANG, now there's a gas line up the street, and Rod has a fine new customer with a model revenue-producing hardening room—all gas.

Want proof that your A. G. A. Industrial Gas Section Publicity really works? One little item in INDUSTRIAL FINISHING about our Infra-red-ray Heating Clinic in Toledo drew no less than 68 letters from some of the biggest names in fabrication, products manufacture, and finish making—all saying, "Count us in for all the dope you have."

We have it straight from the top men of the National Restaurant Association that Al Pitman's Washington talk on deep fat fryer maintenance resulted in 14 invitations to discuss the subject with the employees of large restaurants and (to cite one instance) has saved the S & W Cafeterias thousands of dollars already. That's helping out the customer (and doing a mighty neat piece of indirect selling)! What have you done for your customers lately, other than tell them what to buy?

The U. S. Dept. of Agriculture reports the moisture content of 41 common cuts of meat to be from 45 to 76 per cent by weight. Now, your butcher sells by weight, and commercial gas refrigeration's ace advantage is higher box humidities (lower drying-out effects). Put your own two-and-two together.

Articles in the technical press today which you can use to help sell industrial gas tomorrow: "Applications of Gas to Air Conditioning," George E. May, HEATING PIPING & AIR CONDITIONING, June, pp. 395-98; "There's a Lot of Heat in Natural Gas—Are You Putting It All to Work?", C. H. Modes, CERAMIC INDUSTRY, July, pp. 44-7; "Designs for Fuel Reduction," HOTEL MANAGEMENT also RESTAURANT MANAGEMENT, June; "Controlled Atmospheres for Modern Furnaces," H. M. Heyn, INDUSTRIAL HEATING, August, pp. 683-8.

For September direct-by-mail honors we like Philadelphia Electric Company's broadside in behalf of automatic gas water heating—the one asking "Are you an easy mark?" and deftly teasing the prospect on to a spread of seven good photos showing the laundry, the barber, the beautician, the food packer, and the shoemaker, all bragging about cleanliness at ten cents a day. It's an inexpensive one-color printing job—but the rich brown ink on goldenrod stock makes you think it's costlier.

INDUSTRIAL AND COMMERCIAL NATIONAL ADVERTISING FOR SEPTEMBER

The National Advertising Committee of the Industrial Gas Section, J. P. Leinroth, chairman, and F. B. Jones, vice-chairman, announces that full-page advertisements will appear in the trade and business magazines listed below during the month of September. These advertisements are prepared in cooperation with the Committee on National Advertising as a part of the Association's national advertising campaign.

Ceramic Industry

CERAMIC INDUSTRY Increased production, more uniform quality—with GAS—(General Copy).

Metals Industry

THE IRON AGE (Sept. 12) Gas and modern GAS equipment give
STEEL (Sept. 23) Eaton Manufacturing Co., Detroit,
METALS & ALLOYS close temperature and atmosphere control,
METAL PROGRESS assuring uniformity which reduces
INDUSTRIAL HEATING "rejects"—and affording unusual
HEAT TREATING AND flexibility.
FORGING

Processing Industry

CHEMICAL & METAL- "GAS bill much lower" for "blowing"
LURGICAL ENGINEERING varnish—Glidden Paint and Varnish
Company, Cleveland, Ohio.

General Manufacturing

BUSINESS WEEK (Sept. 21) Industry Mobilizes for Defense.

Restaurant Field

AMERICAN RESTAURANT "GAS is clean, accurately controllable,
flexible, and fast. We wouldn't use
any other fuel"—St. Clair Country
Club, Bridgeville, Pa.
CHAIN STORE AGE "GAS and modern GAS equipment
(Fountain & Restaurant give us flexibility and economy"—Sun
Section) Drug Co., Pittsburgh, Pa.

Hospital Field

MODERN HOSPITAL "Highly Satisfactory," says Charity
Hospital, New Orleans, of modern
GAS cooking.

Food Industry

BAKERS HELPER (Sept. 14) "GAS and new-type GAS ovens give
BAKERS WEEKLY (Sept. 28) me better production"—Gerstung's
Bakery, Baltimore, Md.
FOOD INDUSTRIES GAS "ideal fuel" in making famous
Clark Candy Bar and "Zig Zag" Pop
Corn.



Measurement of Pressures Developed During the Carbonization of Coal*

By CHARLES C. RUSSELL

Koppers Company, Engineering and Construction Division, Kearny, N. J.

PRESSURES developed by coal during the coking process have been responsible for serious trouble to many companies that operate or build by-product coke ovens. The insidious nature of this trouble is indicated by the fact that oven operators, unless they have ascertained the characteristics of the coals they use, cannot determine the existence of dangerous pressures until after the damage has been done.

The following paper presents a highly certain method for the measurement of the pressures developed during the carbonization of coal—a method that is the culmination of many years of work on the problem in which a number of methods for the purpose were investigated and used. While actual pressures found may appear to be small when expressed in pounds per square inch, the number of square inches in each oven wall is so large that the total pressure on the oven wall becomes an enormous load.

Swelling or Expansion

"The coal used . . . will swell during the process of coking to such an extent as to raise the tops from the ovens and push the doors out on each end, though solidly clamped with steel bars. . . ." That statement was written in 1906. Korten's² paper, published in 1920, is of interest. Many papers were written by German investigators. When Altieri³ presented his first paper before the American Gas Association in 1935, it aroused very active interest among American coal technologists. In 1938 the interest had grown to such an extent that a symposium on the subject was held at the Production Conference of the American Gas Association.

It is a curious fact that the term "coal expansion" has been widely accepted in the United States as descriptive of the phenomenon in question. This phenomenon, however, concerns the development of pressures within the coal during carbonization that are exerted against the coke-oven walls. An "expanding coal" is considered to be one that will develop sufficient pressure during coking to weaken, distort or otherwise seriously damage the walls.

It should be noted that the terms "coal expansion" and "expanding coal" do not

carry any implication of pressure development but rather suggest increase in dimensions. Undoubtedly this use of terms has come from laboratory studies of the swelling of coal. Work on this subject has been carried out over a period of years, particularly by English technologists, and has been used principally to determine the relative "coking properties" of various coals and also as a means of separating coals into various ranks. While Brown⁴ states that there seems to be no relation between "expansion" and "free swelling," undoubtedly the fact that rapid gas evolution begins during the heating of coal in about the same temperature range as the coal fuses accounts for both of the behaviors studied.

Whether a coal "swells" or "expands" during carbonization appears to be a matter of the container in which it is carbonized and the manner in which heat is applied. If there is ample free space, the

coal swells up in accordance with its particular characteristics but if the coal is carbonized in a restricted volume, the effort of resisting the swelling is expressed as a pressure. The degree of swelling or pressure developed, however, is quite dependent on the fluidity attained during carbonization and also on the rate of evolution of volatile products.⁵ These factors are functions of the rank of the coal, its composition, and to some degree the rate at which heat is applied.

In a by-product coke oven, the coal is contained between two vertical walls, usually about 18 in. apart, and the charge in the newer ovens is at least 12 ft. high. Because the ovens are about 40 ft. long, the doors at either end play a relatively minor role in retaining the coal. With the exception of the coal at the immediate top of the charge, all of the coal within the coke oven is in some measure restricted in volume. The closer to the bottom, the greater is the restriction. It has been shown⁶ that granulated material in a narrow bin does not behave like a fluid, and consequently the pressure on any plane below the

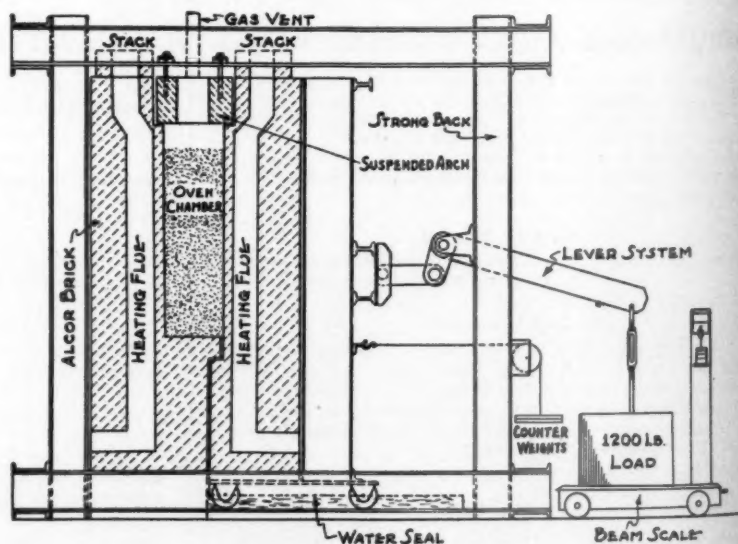


Fig. 1. Oven with Movable Wall

* Extracts reprinted from Technical Publication 1118 of the American Institute of Mining and Metallurgical Engineers.

top of the charge is not equivalent to the weight of the superincumbent coal. However, during carbonization, the effort exerted by the coal in a given position to increase in volume is at least equivalent to the weight of the coal above it.

The degree of packing, expressed as bulk density, has been found by all investigators to be an important function of the amount of swelling or pressure developed. The denser the charge of coal, the greater will be the amount of swelling or pressure developed during carbonization. Auvil and Davis⁷ have shown that the increase (or decrease) in volume of a given coal carbonized under specified conditions is directly related to the expansion of the solid coal. On this basis they have presented a method of calculation whereby the results obtained at one bulk density can be calculated to any other bulk density.

Koppers and Jenkner⁸ describe a large test oven in which coal can be carbonized under substantially the same conditions as exist in full-scale ovens. One of the walls of this oven is entirely separate from the rest of the oven, and is supported on wheels. Any movement or pressure developed by the coal in the oven chamber is transmitted to this movable wall. A hydraulic cylinder is attached to the movable wall, so that the pressure of the coal against the wall may be measured by balancing it with the pressure in the cylinder. A large number of determinations were made with this apparatus. One of the principal, and most important, findings thus obtained was that the pressure developed during the carbonization of the coal rises rapidly and reaches a maximum when the two plastic zones meet at the center of the oven. After the peak of pressure is obtained, the pressure drops precipitately because of the shrinkage of coke formed.

This pressure peak is not shown by any other apparatus described in the literature except that described by Ulrich. Certainly no laboratory procedure produces results that show this phenomenon. In some cases this peak is as much as five times that which was obtained during the earlier part of the coking period. It will be shown later that it is impossible to reproduce this behavior in tests where the coal is heated from one side. And it will also be shown that where coal is heated from two sides and volume increase is measured only a very slight indication of this peak can be obtained. The description of this apparatus and the results obtained therefrom were published in 1931, and it is strange that this important point should have been either ignored or overlooked in all the published accounts of work on coal expansion since that time.

Test Oven with Movable Wall

Some time ago Koppers Company designed and erected a test oven based on the principle of that described by Koppers and Jenkner. The general arrangement of this apparatus is shown in Fig. 1. The oven chamber itself has a capacity of about 400

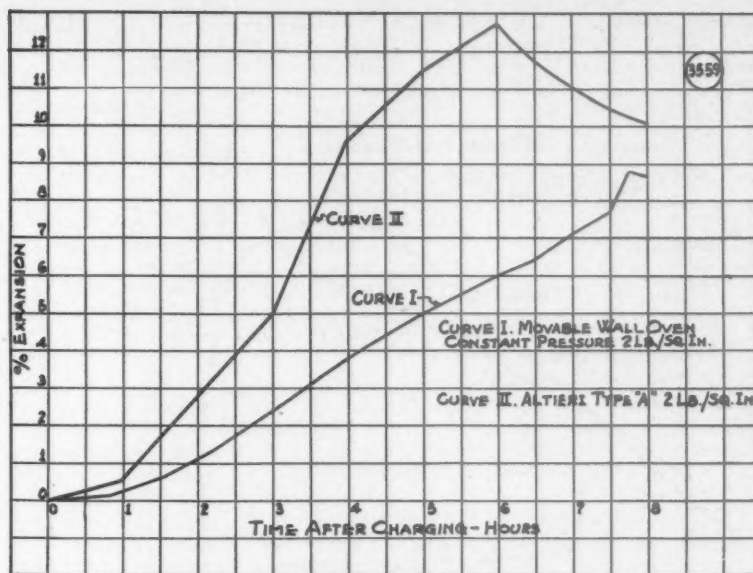


Fig. 2. Expansion Tests, Low-volatile Coal from Beckley Seam

lb. of coal. It is 12 in. wide, 42 in. high and 28 in. long inside the doors. Each wall of the oven has an area of about 1000 sq. in. The heating flues and the face of the oven walls are constructed of standard 9-in. Alcor brick, which has the mechanical properties of silica brick without having the crystallization changes that affect the expansion of silica brick.

This brick was selected so that the oven could be shut down or started up in a relatively short time. The oven is completely insulated with one course of Sil-O-Cel brick and the outside cover is constructed of first-quality firebrick. The roof of the oven is suspended from the top I-beams of the strong back, so that the movable wall will move without contact with the top. The movable wall is constructed on a steel carriage, which is equipped with roller-bearing rollers that rest on 1 1/4-in. cold-rolled round steel; the wheels being grooved so that they have the smallest possible contact with the rails to reduce friction. The entire oven sits within a strong back constructed of 8-in. I-beams and channels.

A lever system with a 7:1 ratio mounted on this strong back as indicated in Fig. 1 is used for the transmission of the pressure or movement to the mechanism for measurement. Weights attached to the movable wall through cables as shown counterbalance the weight of these levers. Instead of the hydraulic cylinder used by Koppers and Jenkner for measuring the pressure developed, a simple mechanical principle has been applied, which is far less expensive and without doubt as sensitive as the hydraulic cylinder. It has the additional advantage that the equipment required is available in practically all laboratories.

The principle involves the placing of a heavy weight (1200 lb.) on a rigid carriage on a fairly sensitive platform scale. The levers as shown are rigidly connected to this weight through two turnbuckles. Before the test is begun the weight of the load is accurately determined, and then carefully connected to the levers, so that the pull is not more than 20 lb. After the coal is charged into the oven, any pressure developed is transmitted to the wall, thence to the levers and to the load. As the pressure increases, the load on the platform scale is reduced proportionately, and this is determined by weighing the load at frequent intervals. In this way a continuous record of the course of pressure developed during carbonization of a test charge can be obtained. Substantially no movement of the movable wall takes place as long as the pressure in the oven is less than the effort required to lift the weight. What movement occurs is determined by a gauge accurate to 0.001 inch.

The oven has only one door which is lined with 9 in. of brick for insulation. The back of the oven is an integral part of the oven structure and contains a carborundum block 5 in. high having 13 holes spaced 1 in. apart, center to center, that lead into the oven chamber. These are used for the introduction of thermocouples to measure the temperature progression at 1-in. intervals throughout the width of the oven. In order to prevent erroneous temperature readings due to transmission of heat through the steel protecting tubes, the thermocouple wells are staggered in length. The center couple is the longest and each couple proceeding from the center toward each wall is 1 1/2 in. shorter than its adjacent couple.

The oven is heated with coke-oven gas

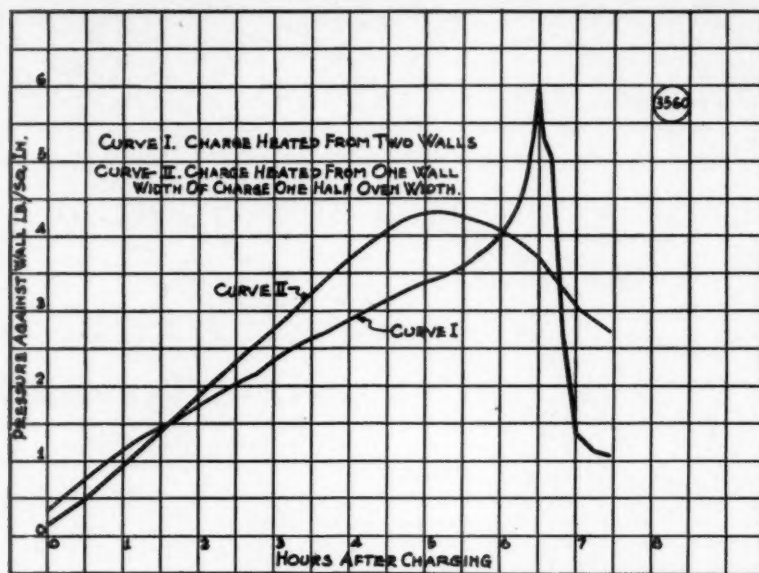


Fig. 3. Expansion Tests, Low-Volatile Coal from Beckley Seam, in Movable-Wall Oven

conducted to the flues through open pipe burners. The gas main to the movable wall is of flexible steel tubing, to avoid strain. This also allows the movable wall to be moved out for cleaning. Temperatures of the heating flues are obtained by means of an optical pyrometer at three locations in each wall.

Coal is charged into the oven from a hopper 6 ft. above the top of the oven, through a pipe, into a hole in the center of the suspended top. After charging and leveling, the pipe is removed and a gas vent installed in its place. The charge is coked until the center thermocouple indicates a temperature of about 600° C. At that temperature the coal has passed through its plastic stage and has become solidified coke. It has also been found that above that temperature no further increase in pressure is obtained. With low-volatile coals that produce high pressures, the maximum pressure has been reached below that temperature and the rapid pressure decrease is well in progress. At the end of the coking period, the coke is raked out of the oven by hand.

In the first group of tests made with this oven, the wall was allowed to move against a pressure of 2 lb. per sq.in. This pressure was exerted by hanging weights equivalent to that pressure on the lever arms, and in that case the levers were not connected to the 1200-lb. load described above. The oven was referred to in an earlier paper¹² but few data were at hand when that paper was presented. Fig. 2, curve I, shows the movement of the wall found for a low-volatile Beckley Seam coal. The movement is expressed as percentage of the original

oven width. Particular note should be made of the upper end of the curve, where the rate of movement increases rapidly for a 15-min. period, and then drops off slightly. Curve II shows the data obtained when testing this coal in the Altieri type A apparatus. Data of each are shown in Table 1.

TABLE 1
EXPANSION TESTS OF LOW-VOLATILE COAL FROM THE BECKLEY SEAM*

Oven	Maximum Linear Expansion, Percentage of Original Width	Bulk Density of Coal as Tested, Lb. Per Cu.Ft.	Load on Coal, Lb. Per Sq.In.	Original Thickness of Coal, In.	Temperature of Heating Wall, End of Test, Deg. C.
Koppers movable-wall oven	8.8	54.0	2	12	971
Altieri type A	12.6	55.5	2	6	934

* See Fig. 2.

These data indicate that the two methods of testing this coal produce results of comparable magnitude. By calculation of the results from the Altieri type A to 54.0 lb. per cu.ft., as described by Auvil and Davis,⁷ the percentage of maximum expansion is found to be 9.6 per cent, which is within 1 per cent of that found in the movable-wall oven. Sufficient data were not obtained to show that such accuracy can be sustained.

When the movable-wall oven was rearranged to make tests wherein the pressure developed during carbonization was determined, the first coal investigated was also a low-volatile coal from the Beckley Seam comparable to that of Table 1. Fig. 3, curve I, shows the data thus obtained. The curve indicates data that are comparable in

general with those described by Koppers and Jenkner.⁹ Near the end of the coking period a high peak of pressure is found, which occurs at the time of the junction of the two plastic zones.

In order to prove directly that it was the juncture of plastic zones that caused the sudden increase in pressure near the end of the coking period, the oven was arranged so that it was heated from the movable-wall side. By so doing, the coking proceeded from one wall and there was only one plastic zone. To reduce the coking time to be comparable with that of coking from two walls, one-half the oven was filled solidly with brick. This made a coal space one-half that of the normal oven. In order to prevent the cold wall from absorbing heat from the hot wall, the coal space was packed with Sil-O-Cel brick until just before charging the coal.

When the test was ready to be made, the Sil-O-Cel brick were withdrawn, the door put back and luted and the coal charged as soon thereafter as possible. Fig. 3, curve II, shows the data thus obtained. In this test there is no indication of any pressure peak near the end of the coking period. In contrast, the pressure increases at a rate fairly comparable to that in the early part of the coking period, where the coal is heated from two sides, and then more gradually decreases. This curve has much the same general shape as those obtained in test apparatus where the volume change is measured and where the coal is heated from one side.

These tests prove quite conclusively that

when two plastic zones are present a high peak of pressure is developed when coking low-volatile coal in an oven heated from two sides. They also indicate that where coal is heated from one side only, giving rise to one plastic zone, no such peak of pressure occurs. The methods of testing now in use in the United States all heat coal from one side only. Under these conditions it is impossible to produce this pressure peak. Furthermore, these same methods all measure expansion of the coal in terms of increase in dimension of the coal charge.

Fig. 2, in which is shown the measurement of the increase in width of the movable-wall oven, also shows the increase in rate of change of width that occurs near the end of the coking period. The total change in width during this period of in-

creased rate of change of width amounts to only 0.13 in., or about 13 per cent of the total change in width. On the other hand, the pressure peak is as much as 40 per cent higher than the pressure just prior to the beginning of the rapid rise.

In the case of borderline coals, the knowledge of the existence of this pressure becomes far more important than for coals that are known to be dangerous to coke-oven walls. The present methods of testing use a load of about 2 lb. per sq.in. While this may be an arbitrary value, the interpretation of the test results made on that basis presumes that a coal is dangerous to coke ovens that increases in volume under the load of 2 lb. per sq.in. This literally means that during the carbonization of the coal in the test apparatus pressures greater than 2 lb. per sq.in. are produced.

With borderline coals that are tested under that load and heated from one side, pressures of just under 2 lb. per sq.in. may be developed, in which case no increase in volume can occur and the final value obtained may indicate a slight shrinkage. However, because the coal is heated from one side, even the small rapid increase cannot be found near the end of the coking period because of the presence of only one plastic zone. Consequently, the pressure peak of more than 2 lb. per sq.in. that would occur when the coal is coked in a full-scale oven is not detected by the present methods of testing.

Borderline Example

Fig. 4 shows an example of the situation described above. Curve I shows the results obtained with the Altieri type A apparatus, and indicates that the coal would be safe to use. In curve II the pressure developed during coking is shown. It will be noted that 1½ hr. after charging the pressure reached 1.75 lb. per sq.in., and that it remained consistently at that value until very near the end of the coking period. At that time the pressure increased rapidly to 4 lb. per sq.in., after which it dropped rapidly. This condition must exist in full-scale ovens, for the walls are rigidly fixed and there is no possibility that a volume change may relieve this pressure. It should also be considered that in this case the pressure was developed in a charge only 36 in. high, whereas in full-scale ovens the charge is approximately 144 in. high.

High-volatile coals and various mixtures used regularly in a number of coke-oven plants have been tested with this oven. None of the high-volatile coals have been found to produce a pressure of more than 1 lb. per sq.in. A few mixtures of high-volatile and low-volatile coals that are regularly used produce pressures as high as 1.5 lb. per sq.in. It is also interesting to note that the coals that produce pressures under 1.5 lb. per sq.in. generally do not exhibit a peak of pressure near the end of the coking period similar to that obtained

with the low-volatile expanding coals. Probably this can be explained on the basis that these coals become quite fluid, so that even with the juncture of the two plastic zones the fluidity of the coal is high enough to permit the escape of gas without the creation of high pressures. In the relatively small amount of work that has been done to date on the measurement of fluidity of coal by the Gieseler method, it has been found that the maximum fluidity of a number of low-volatile coals is of the order of 10 units or less, whereas the high-volatile coals are in a range from 1000 to 3000 units. This tends to substantiate the statements just made.

Density Important

Bulk density of the charge to be tested has been found to be an extremely important factor in affecting the pressure developed. Koppers and Jenkner¹⁰ have pointed this out, and it has been the experience of all investigators, no matter what method was studied. To make the bulk density of the test charge in the movable-wall oven comparable to that found in full-scale ovens is a difficult problem to solve. In the first place, the exact bulk density of coal in the full-scale ovens is difficult to estimate. As mentioned earlier, attempts have been made to determine this in a full-sized oven constructed of wood, but some data are at hand to indicate that the charging of coal into a cold oven is not comparable to charging it into a regular hot coke oven of the same dimensions.

The wooden oven method has shown that there is considerable variation in a coal charge. It appears reasonable, however, to make the expansion tests at the highest

bulk density that may be presumed to exist in the coke oven. Since bone-dry coal appears to have a fairly uniform bulk density of about 54 lb. per cu.ft., it is believed that that figure should be the minimum value for use in test procedure. To attain this value in the movable-wall oven tests, it has been found that air-dried coal of less than 2 per cent moisture is quite satisfactory.

The description of this movable-wall oven and the presentation of results have been made to demonstrate some of the fundamental factors that must be considered in designing satisfactory testing equipment for the determination of coal expansion. No claim is made that the apparatus described should be adopted as a standard procedure for testing, but any apparatus selected for standard procedure must embody the principles that have been described.

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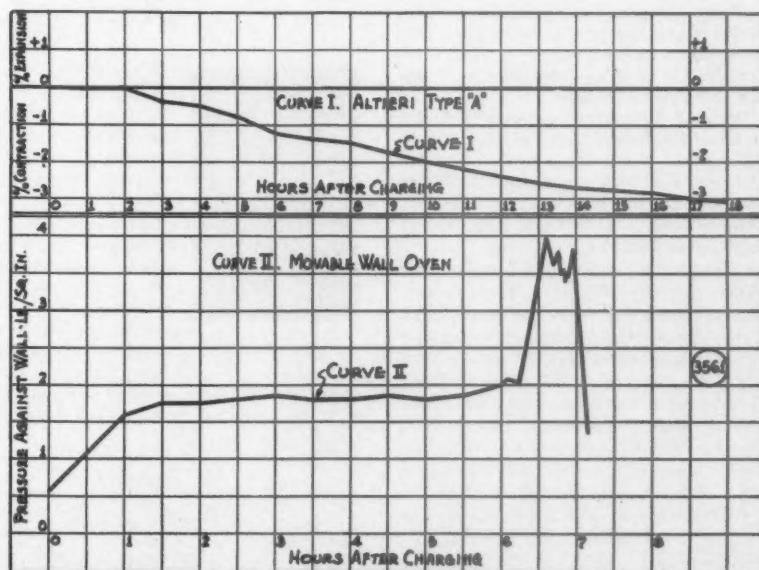


Fig. 4. Comparative Tests of Borderline Coal Mixture

A. Gordon King Appointed Secretary of Technical Section



A. Gordon King

ANNOUNCEMENT has been made by Major Alexander Forward, managing director of the American Gas Association, of the appointment of A. Gordon King as secretary of the Technical Section, effective August 1. Mr. King, who has been service engineer for the past 17 years, succeeds the late Hugh W. Hartman.

Mr. King has had most thorough education and broad experience in gas production and distribution. He has wide acquaintance in the industry, especially with engineers and other technicians and has worked closely with the Section, having been at times its acting secretary. His occupation has also given him valuable knowledge of regulation, rate making and standardization.

Educated in England

Trained and educated for the gas industry in England, Mr. King was first employed as cadet engineer in England. He holds the full technological certificate of the City and Guilds of London Institute, honors grade, in gas manufacture and allied subjects, as well as the honors grade certificate and prize of the Regent Street, London, Polytechnic in gas manufacture. He is a member of the Institution of Gas Engineers and a licensed professional engineer of the State of New York.

Following gas company service in England, Canada and the United States, Mr. King served in the Chemical Warfare Service of the U. S. Army at Washington, Lakehurst and Ammol Arsenal.

Upon discharge from the Army he joined a firm of industrial gas fuel engineers in New York. Prior to being called to active duty he was with the Consolidated Gas Company of New York for more than four years as one of Colonel Oscar H. Fogg's assistant engineers.

He joined the staff of the American Gas Association on February 1, 1923, coming to the Association from the Pennsylvania Public Service Commission where for two years he held the position of gas engineer. He had previously served as gas engineer for the Public Service Commission, Second District, State of New York. He had qualified for this appointment at a Civil Service Examination, where he headed the eligible list with an average standing of 96.68%.

While with the Association his work has included field service work for member companies and lectures at educational institutions on technical matters relating to the gas industry. He conducts part of an

annual course on gas engineering at the Brooklyn Polytechnic Institute.

As a member of A. G. A. Headquarters staff, Mr. King has been secretary of several general committees, including Standards and Service, Rate Fundamentals, Aids in Aviation, Purging Gas Holders and Gas Works Apparatus. He is secretary of the recently created Association Committee on National Defense.

In addition to his other duties, Mr. King conducts the Personnel Service Department of the Association. He has also been active in amateur photography, taking many photographs at gas conventions and other meetings which have appeared in the gas industry trade press.

Book Review

Vol. XIII, Characteristics of Minable Coals of West Virginia. (Another New Publication by the W. Va. Geological Survey.)

Paul H. Price, the State Geologist, has announced the release of another report, Vol. XIII, on the State's most important mineral resource, entitled "Characteristics of Minable Coals of West Virginia."

This report brings together for the first

time under one cover descriptions of the physical and chemical characteristics of all minable coals in the State, and has been prepared primarily to answer the many inquiries from producer and consumer relative to the characteristics of West Virginia coals.

The volume is divided into two parts, and is accompanied by a packet of maps and graphs. Part I describes the 62 minable coal seams and includes figures showing probable minable extent of each seam, with descriptions and sections of each, and intervals to other seams and key horizons. Part II, A Statistical and Correlational Study of West Virginia Coal Analyses, includes cumulative distribution curves of coal analyses, isocarb map, and relationships of calorific value, volatile matter, etc., for certain coals.

This report was written by A. J. W. Headlee, Chemist, and John P. Nolting, Jr., Assistant Geologist, and contains 272 pages, 18 plates, 112 figures, map showing location of commercial coal mines by Charles E. Hare, Assistant Geologist, and nomograph for calculating mineral-matter-free coal analyses.

The Appendix gives Nomenclature of Minable Seams, Coal Analyses, and Five-Minute Section Averages. Tables showing estimated total original tonnage by minable seams, minable seams by counties, original tonnage by counties, and in counties by seams, are by R. C. Tucker, Assistant State Geologist.

Price, \$1.53. Please remit to W. Va. Geological Survey, Morgantown.

Chief Chemist Dies Following Retirement on June 30



E. C. Uhlig

EDWARD C. UHLIG, who retired as chief chemist of The Brooklyn Union Gas Company, Brooklyn, N. Y., on June 30 after a service of 36 years, died on August 20 at the age of 72 years. Widely known for his many contributions to the gas industry, a large part of them through Association work, his death will be keenly felt throughout the country.

At the time of his retirement Mr. Uhlig was head of the company's laboratory which he organized and directed until it reached an enviable position in the gas industry.

Born in New York City, he was educated at De La Salle Institute and Cooper Union Night School, completing a course in gen-

eral science and chemistry at the latter institution. He also took special courses on water purification and organic chemistry at the Polytechnic Institute of Brooklyn.

Mr. Uhlig earned his way through school by working for an importing firm. Upon graduation from Cooper Union he became a chemist with a glass company. He remained there until he joined Brooklyn Union in 1904. During the World War he was in charge of toluol production in Brooklyn Union.

He was a member of many professional and industrial organizations, including the American Gas Association, American Chemical Society, American Society for Testing Materials, American Association for the Advancement of Science, American Institute of Chemists, Society of Chemical Industry of London, England, Society of Gas Lighting and the Chemists' Club.

For three years Mr. Uhlig was chairman of A.G.A. Chemical Committee. His most recent of many Association activities was his chairmanship of the Steering Committee for the "Fuel-Flue Gases" Book.



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The American Gas Association's Laboratories as a Training School

By F. E. VANDAVEER

Assistant Director, A. G. A.
Testing Laboratories

THIS year marks the fifteenth anniversary of the American Gas Association's Testing Laboratories. At the inception of this pioneering and far-reaching program in the certification of consumer goods it was the belief of the industry's leaders that the Laboratories' activities would be of general benefit by insuring the sale of safe and satisfactory gas appliances.

This objective has been the motivating factor in all of the Laboratories' endeavors since that time. Today all common types of domestic gas-burning appliances and accessories, together with certain types of commercial appliances are examined for approval, and it is conservatively estimated that 95% of all domestic appliances sold in the United States and Canada are approved models. This is concrete evidence of the vital part the Association's approval and testing program has had in the industry's affairs.

Collateral Advantages of Testing

As might be expected, collateral advantages have accrued to the principal purpose of certifying gas appliances. Among these may be mentioned research activities carried on in connection with preparation of approval and listing requirements, as well as research on fundamentals of domestic gas appliances, industrial gas combustion, and effect of interchange of gases on appliance performance, all of which have had for their objectives the improvement of utilization equipment and processes.

An additional valuable by-product of the Testing Laboratories' operations has been the training of engineers in utilization matters, who have thus been made available to various components of the industry desiring their services. This result, as should be obvious, has been incidental to the Laboratories' regular functions. Nevertheless, it can be definitely stated that one of the most valuable contributions our Association's Laboratories have made to the gas industry is the training of men in the utilization of its product.

Manufacturers of gas appliances and accessories especially, as well as gas companies, are looking more and more to the Laboratories for young engineers with such training. In many such instances manufacturers have never previously employed a full-time engineer and have never done scientific investigational work at their fac-

tories. In others, technical staffs are being increased to keep abreast of the rapid changes and improvements in appliance construction which have been going on in recent years. The net result in either event is a quickening of development, with added appreciation of the necessity of research and the value of trained personnel to our business.

Engineers with Laboratories' training are also being used effectively in sales work. This is particularly true where the article sold is a part of a complete appliance, as for example, a thermostat or automatic pilot. Utility companies find laboratory men adaptable to many tasks, mainly, however, in appliance testing work, employee service training schools, and utilization work of various kinds. To meet competition with other fuels which is making full use of trained technical men, it is necessary that the gas industry be provided with men possessing thorough basic training.

Raw Material of Industry

During the past 13 years out of a total of 172 engineers who have been or are receiving training at the Laboratories, 102 have gone out into industry. Of this number, 33 are now with appliance manufacturers, 7 with accessory manufacturers, 8 with gas companies, 3 in consulting engineering practice, 7 with other manufacturers, 2 deceased, 13 with universities or government bureaus, 13 outside the gas industry, and 16 unaccounted for. Fifty-one of these men are actually working in the gas industry, and 20 others are partially participating.

It is, of course, important for the type of testing and research work carried on at the Laboratories, to have a personnel of high scholastic standing, and one susceptible to training in a specialized field in which it possesses particular interest. Accordingly, qualifications for employment as a test or research engineer have always been maintained at a high level. An applicant to be given consideration must be a graduate of an accredited engineering college or university and have at least a bachelor's degree. Graduates in chemical, mechanical, elec-

trical, or civil engineering, chemistry and physics have been found best qualified for the Laboratories' needs, other conditions being equal; although graduates in other fields are considered if they have had thorough technical training. Likewise, for special research problems, men trained for that particular type of work are employed.

Personal interviews are always required, these being conducted individually by the various department heads who comprise a personnel committee. The purpose of this procedure is to judge the applicant's personality from the different viewpoints of the various men on the committee. It is considered highly desirable that a man not only be qualified on the grounds of technical training and scholastic standing, but that he have the ability to work closely and cooperatively with others. If the committee agrees that a man is suitably qualified as to personality, character, training, and ability, the applicant is finally interviewed by the Laboratories' Director.

Cross-Section of Training

In order to maintain a well-balanced staff and to obtain a good cross-section of training done by various universities, graduates from as many schools as possible are selected, and men with various kinds of training included. At present the Laboratories have on their staff graduates from 31 different universities. The greatest number from any one school is 12. Chemical and mechanical engineers are in predominance and about equally divided.

A new employee is usually assigned to one of the appliance testing sections as, for example, gas ranges, water heaters or furnaces, for a period of 6 to 10 months. His work is closely supervised by the section head as well as the department head or his assistant. After he becomes familiar with testing one type of appliance he is transferred to another section for a period of several months. This is continued until he has worked in all major testing sections, in this manner securing thorough training in the various types of appliances.

During the winter season study classes for all employees are held once weekly, partly on laboratory time and partly outside of working hours. In these classes, test procedure, laboratory policies, appliance design, research problems, and items bearing directly on our work are thoroughly dis-

cussed. For men who are interested in learning more about other phases of the gas industry, a second class is conducted weekly by one of the staff members using Prof. Morgan's books on manufacture, distribution, and utilization of gas.

Employees are encouraged to interest themselves in appliance design, burner design, gas production, distribution, and utilization, and in securing a more rounded knowledge of the gas industry. Discussions on business practices and related subjects are also held periodically. It is hoped to develop each man to his highest efficiency and to provide all possible facilities for his training. In other words, ample opportunities for improvement are provided, and it rests with the individual to take advantage of them.

One of the unique advantages of both the Cleveland and Los Angeles Laboratories is their location in cities in which universities have night extension and technical courses. Each year a number of the engineers enroll for various courses which are helpful in broadening their technical and cultural background. For example, last year seven of the Cleveland employees attended night school classes taught by the Laboratories' Industrial Engineer.

After basic training received in routine testing work and from the educational facilities provided, men are eligible for advancement within the organization. The first step in such advancement may be to head of a testing section, a field inspector, or to the research department.

Two-Year Training Necessary

The time required for preliminary training depends, of course, on the individual. In no case is it considered that a man, regardless of his attainments or ambition, can receive adequate experience in less than two years' time, although he may become expert in certain specialized fields of testing in a considerably shorter time. Ordinarily it requires an average of four years before a man becomes thoroughly trained and experienced in the phases of utilization work covered by the Laboratories' activities.

Accordingly, it is considered desirable to refer all requests from the industry for engineers to men who have been with the Laboratories for a period of at least three or four years. In many cases, however, younger men are advised of an opportunity where the request is specifically confined to specialized testing or other relatively narrow spheres of activity. The Laboratories' management always attempts to direct requests to those men who are considered to be qualified for the type of position involved. Naturally, the Laboratories exercise no control over the aspirations of any of their employees who may on their own initiative obtain a position within or outside the industry. In any event, the manufacturer or gas company requesting one of the Laboratories' engineers, interviews the prospect and decides finally as to employing him.

Former A. G. A. Laboratories' Employees



W. M. Couzens, Gaffers & Sautler, Los Angeles, Calif.



C. R. Lawrence, Atlanta Gas Light Co., Atlanta, Ga.



J. N. Crawford, The Bryant Heater Co., Cleveland, O.



J. W. Farren, Italian-Morley Co., LaPorte, Ind.



R. J. Morris, The United Gas Improvement Co., Philadelphia



R. I. Snyder, Southern California Gas Co., Los Angeles



C. S. Stuckebolt, The W. J. Schoenberger Co., Cleveland

Many comments and letters have been received from former Laboratories employees in appreciation of the training received and the value it has been to them. Typical quotations from letters received from two who have been away long enough to gain a true perspective illustrate this point:

1. "I do feel and always have felt that no better training could be obtained anywhere on the technical side of the gas business than at the A. G. A. Laboratories; together with the facilities offered through research and committee activities, it is the most fitting background for a sound schooling in most all of the engineering fields of the gas industry, both in appliance manufacturing and utility companies."
2. "In my opinion, the training of engineers at the A. G. A. Laboratories is a definite contribution to the gas industry, as well as a material aid to the engineer receiving the training and this is a phase of the Laboratories activity which could well afford to be publicized."

It will, of course, be appreciated that the primary objective of the careful training given to engineers at the Testing Laboratories is to provide competent testing and research engineers, as well as men who will be capable of occupying semi-executive or executive positions. It is only natural that the Laboratories are interested in advance-

ment of all of their engineers who have been trained at considerable expense and effort commensurate with their ability. Obviously it is necessary to retain a certain number of key men. It may be of interest to note in this connection that 14 of the Laboratories' oldest employees represent a combined period of service of 182 years, or an average of 13 years each. However, in spite of the necessity of retaining at all times a number of trained men in the Laboratories' personnel, it has been considered an obligation to the industry to have available a source of trained engineers and research men.

The appliance manufacturing and utilization side of the gas industry is in the fortunate position of being able to secure young engineers with technical training and experience along the lines desired. It is a basis of considerable pride to those who have assisted in training these men, to see the growing list of successful former employees. To illustrate the diversity of positions held by former employees and the geographic locations of these men, pictures of 7 of them are included herein. It should also be a source of encouragement and pride to everyone interested in seeing the gas business keep pace and advance with the changing times. Only with adequately trained personnel can this progress continue. Here is a practical answer to the demand for more trained technical men for the gas industry.

Second Domestic Gas Range Research Bulletin Available

A SECOND bulletin on domestic gas range research has been published and distributed to gas company and domestic range manufacturer company members by the American Gas Association. This bulletin (No. 8) is one of a series of bulletins resulting from a broad program of research which have been published recently. Bulletin No. 9, Fundamentals of Domestic Gas Water Heating, and Bulletin No. 10, Research in Fundamentals of Atmospheric Gas Burner Design, were distributed to the industry on May 22 last.

These investigations were carried out with the cooperation of a technical advisory committee composed of manufacturers of the equipment being studied. It was never intended that they should substitute for research and engineering developmental activities conducted by individual manufacturers, but to supplement research carried on by other agencies, particularly in those fields where properly conducted studies would produce technical data susceptible of wide application.

Comment from London

Commenting on this program, and particularly on Bulletin No. 9, Fundamentals of Domestic Gas Water Heating, the July 3, 1940, issue of *Gas Journal* (London) stated:

"We have had occasion previously to congratulate the Association on the results of this type of cooperative research, and we have no hesitation in commending the work described in the present bulletin. . . .

"It was not intended in the very least that the investigation should be a substitute for these separate and independent activities. Actually, far from discouraging these independent activities, the scope and intensity of such work have increased during the period covered by the A. G. A. investigations. We are not at all surprised that this has been the case, and it constitutes a strong argument in favour of cooperative industry research. It does give rise to a better understanding of the desirability and value of research. . . ."

Bulletin No. 8 represents the culmination of 3 years extensive investigation on domestic gas ranges conducted at the A. G. A. Testing Laboratories. It contains results of all studies completed on gas ranges since issuance of Bulletin No. 7 in 1936 as well as a summary of the more important information included in this latter publication. The new data presented are confined to problems common to all types of domestic ranges and include such fundamental subjects as oven insulation, aeration of burner flames, venting of flue gases, combustion, speed and economy of operation.

Results of burner design research for gas ranges were summarized in "Research in Fundamentals of Atmospheric Gas Burner Design," Bulletin No. 10, which also pertains to burner design for domestic gas water heater burners. In view of the scope and general applicability of burner design investigation it was deemed advisable to

New Research Bulletins

(Continued from page 304)

of flue products are dealt with, and the relationships found between gas composition and composition of resulting flue products is set forth.

Burning gases with the minimum percentage of air theoretically required for complete combustion (67% for natural gas, and 55% for manufactured gas), it was found that the concentration of carbon monoxide and hydrogen produced was 17.8% for natural gas, and 26.0% for manufactured.

Combustion Data Given

Data are presented showing effect of air supplied for combustion on flue constituent volumes formed per cu.ft. of fuel, maximum flue gas temperatures developed, amount of heat in flue products at various temperatures, amount of gas burned per unit of combustion space, and flame lengths encountered under these conditions. It may be of interest that about 5,000,000 B.t.u. per hr. per cu.ft. of combustion space could be burned at the minimum aeration required to support combustion of natural gas (68%), while nearly 4,000,000 B.t.u. per hr. per cu.ft. of combustion space was accommodated with manufactured gas when supplied 59% of the air theoretically required for complete combustion.

In addition, a chapter on practical interpretation of data is included which discusses methods of producing furnace atmospheres of desired composition by partial combustion of gas, design of burner, and combustion chamber for operation under reducing conditions, and resultant flue losses for such conditions.

In printed form, the bulletin com-

assembles these data in a separate bulletin. However, ample references to Bulletin No. 10 are included for the reader's convenience.

It is hoped that results of this investigation will be widely employed to best advantage in the interests of improving gas range construction and performance and thereby provide even more satisfactory service to gas consumers. Copies of Bulletin No. 8, as well as the other bulletins mentioned, are available at the American Gas Association Testing Laboratories, 1032 East 62nd Street, Cleveland, Ohio.

prises 108 pages and 37 graphs, embodying data obtained from over 2500 observations of flue gas temperatures, gas rates, and aerations, and 750 complete flue gas analyses. While the results contained in this publication should, in themselves, be of considerable value to the industry, an equally important consideration is that the bulletin marks completion of all preliminary phases of the project, and solution of many difficult mechanical problems. It represents, therefore, a substantial basis for continuation of research in reducing atmospheres into even more fruitful fields.

The new research bulletins which have been discussed briefly in the foregoing may be obtained from the American Gas Association in New York City or from the Testing Laboratories in Cleveland. Inasmuch as the material in them is necessarily a summarization of considerable detailed data, it is probable that the reader may have need for additional data or interpretation of results which are not specifically set forth therein. In such cases, the Testing Laboratories will be pleased to assist representatives of member companies to properly interpret results or supply any additional data that they have available.

Find New Use for Old Holders

TWO gas holders at Albert Lea, Minnesota, belonging to the Interstate Power Company have been converted into a garage and a storeroom. The holders were formerly used to store manufactured gas but when the company changed to natural gas they were no longer needed for that purpose. Doors have been cut in the holders and lights installed.

Controllers Institute Publishes Book

THE Controllers Institute of America, 1 East 42nd St., New York City, has just published a new book entitled "Controllershship: Its Functions and Technique" by John H. MacDonald. Said to be the first of its kind in this field, the book is designed for controllers and all others whose work touches on that of the controller, including public accountants, business executives, bankers, university instructors, corporate directors and attorneys.

Various sections of this new book define controllershship, its functions and the relations of the controller with public accountants, governmental bodies, as well as the controller's relation to company policies and management. One chapter deals with controllers' reports and their interpretation.

Copies of "Controllershship: Its Functions and Technique," may be secured from the Institute at \$2.00 per copy plus postage.

Prize-Winning Ads in Booklet Form

UTILITY companies are urged to place their orders now for the 1940 booklet of prize-winning advertisements of the Public Utilities Advertising Association, according to an announcement by Thomas H. Spain, Newark, New Jersey, who is chairman of the Association's Better Copy Contest. This book of 62 pages contains all of the national and regional awards in the Association's contest.

Only about 150 copies are available now, Mr. Spain said, and the supply will soon be exhausted. The price is \$2.50 and orders should be sent to Mr. Spain, c/o Public Service Electric and Gas Company, 80 Park Place, Newark, New Jersey.

W. L. Hayes Made CP Regional Manager

W. L. HAYES of the Montana-Dakota Utilities Company, Minneapolis, has been appointed CP Regional Manager for Nebraska, Minnesota, Montana, South Dakota, North Dakota and Iowa. Mr. Hayes will serve on the A. G. A. Domestic Range Committee for the balance of this year and for the entire year of 1941.

New Orleans Collection Plan

(Continued from page 312)

come in to discuss their bills after the weather had moderated and would feel that they really couldn't have used the gas billed, it was decided to provide an attractive weather chart which would picture for the customer the conditions existing during his reading period.

This chart, measuring 6'6" x 36', provided for the record of the low temperature reported by the U. S. Weather Bu-

reau from December 1, 1939, through March 31, 1940. It was kept up to date by painting in each day's low on the following morning.

In order to make this more than just "another chart" and to create "eye appeal," scenes and figures typifying Christmas, New Year's, Mardi Gras, Easter, and other holidays and local events were painted in colors along the lower part of the chart in positions relative to their respective dates, thus dramatizing the four months' period. Beginning February 3d the chart was prominently displayed on a wall in the division where customers discuss their bills.

We believe that the combination of extended payments and the chart enabled us to satisfy many customers who might otherwise have been very difficult to handle. The favorable comments received indicated that customers realized the company was sincerely trying to help them understand their high consumption of gas and at the same time was willing to accept any reasonable plan of payment. So without attempting to assign any relative values it may be concluded that in this instance, at least, the policy followed was "just what the customer wanted."

Personnel Changes in California

SOUTHERN Counties Gas Company in California announces the following extensive personnel changes in districts served by the company:

Carl Summers, for many years district manager of the Ventura and general pipe line district, resigned on July 1 to engage in other activities. His place was taken by Justin M. Kennedy, formerly district manager in the Monrovia district.

A. E. Madden, district superintendent of Monrovia, was promoted to the management of the district and his former position was filled by H. W. Keiser who was his assistant.

In the Whittier district R. W. Gregory, former district superintendent at Santa Barbara, succeeded to a position of district superintendent left vacant by the resignation of Roy F. Blankenship. R. C. Merrick was transferred from the Gas Distribution Department in the Santa Monica district to succeed Gregory in Santa Barbara.

Personnel Service

SERVICES OFFERED

Advertising and sales promotion man, accustomed to handling entire operation, with additional advertising agency experience. Outstanding record of success extending over ten years. Important committee posts. Now employed. Interested in responsible position with utility or manufacturer. 1374.

Distribution Superintendent or Engineer: Eight years' experience with leading natural and manufactured gas companies on operation, maintenance, pressure control, appliance testing and servicing, customer service and appliance educational activities. Graduate engineer (B. S. and M. S. degrees); now employed. Married. (35) 1375.

Sales executive with background of sales promotion—merchandising—dealer helps—publicity experience—thorough knowledge of coordinating all phases of marketing—harnessing energies of dealers behind planned promotions—ability to plan, direct and execute, have produced outstanding results. Good personality. Married. (33) 1377.

Financial Clerk, university graduate, desires position, corporation finance. Experienced securities budget, securities records, general office, water works, gas & electric holding corporation, three years. Securities analysis and accounting. 1382.

Young gas distribution engineer feels that he has served his apprenticeship as assistant superintendent for nine years in high, medium and low pressure distribution of manufactured gas. Now employed in a district maintaining about 90,000 meters. Married, fair education. (33) 1383.

Chemist and chemical engineer, twenty years' experience in coke oven, water, producer, and natural gas; also coke, water gas, and producer plant operation. Desires posit on as superintendent coke or other gas plant, as chief chemist large plant, or in chemical research. Available immediately, location immaterial, salary reasonable. 1384.

Management Executive—Comptroller—Many years' experience throughout United States in operating and holding company general management, finance, rate cases, accounting, public relations. Broad training in organization and reorganization activities. Available now due to completion special sales campaign assignment. (44) 1385.

SERVICES OFFERED

Manufacturers' representative having excellent contacts among domestic, commercial, and operating departments of Metropolitan New York Utilities would welcome the opportunity to promote the sales of gas consuming and labor and time saving specialties of merit. 1386.

Sales Executive—property manager. Twenty-three years' experience in the utility business plus three years' sales promotion work with one of the largest gas appliance manufacturers. Outstanding record in merchandising and sales management. Experienced in meeting electric competition; well qualified in building good will. 1387.

Sales Engineer with twelve years' experience in gas utilization as applied to industrial heating operations in addition to previous combustion work with other fuels. Experienced in sales; design, erection, surveys. Desires sales agency for New York and surrounding territory of product having industrial application. 1388.

Professional Mechanical Engineer, university graduate. Nine years' experience in high and low pressure distribution. Three years' experience in banking and real estate appraising. Experienced in manufactured and natural gas. Positions held: Chief draftsman, cadet engineer, appliance service manager and assistant engineer for gas holding company. 1389.

Gas Appliance Engineer desires opportunity with gas company, or manufacturer where training and experience can be used to advantage. Three and one half years' experience with outstanding manufacturer, all phases of testing, design and development of gas appliances. Thorough knowledge of combustion, air flow, heat transfer, safety controls. Salary moderate. 1390.

POSITIONS OPEN

Wanted: **Factory representative** for gas-fired incinerators, preferably one who calls on utilities, architects and builders preferred for Detroit area, also Indiana, Iowa and Ohio. 0350.

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